FERTILITY AND STERILITY IN MARRIAGE

THEIR VOLUNTARY PROMOTION AND LIMITATION

E806

BY

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DEDICATED

TO THE MEMORY
OF MY MOTHER

'Man's reverence for Woman is based on this: in Woman's body slumbers—Immortality."

CARL LUDWIG SCHLEICH.

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"There is no virtue in evasion,
No courage in prejudice,
No salvation in ignorance."

LINCOLN COLCORD.

PREFACE

IT is a duty to render thanks where they are due, and a pleasure as well: for it is pleasant to have had occasion for gratitude. So, at the threshold of my book, I have special pleasure in expressing my cordial thanks to my colleague, Dr. *Otto Herschan* of Breslau, who has indefatigably helped me with extensive preliminary work for several of the following chapters.

I am greatly indebted to Mr. *C. A. Bang, O.B.E.*, of Prestwood, Bucks., for much valuable help, and for the way he has exerted himself introducing my works in the English language.

Finally, I wish to thank Miss *F. W. Stella Browne* for the extraordinary care she devoted to the translation, and Mr. *J. Johnston Abraham, F.R.C.S.*, for his valuable advice and for supervising and reading the proofs.

This is the third and last volume of my trilogy on marital problems. It deals with extremely significant matters, and with questions in the forefront of public interest to-day; questions as difficult to elucidate as they are important to estimate and understand. Therefore, I have been obliged to limit the subject-matter of this book to what seemed absolutely essential for the mastery of general principles and main facts. In my original plan, chapters on individual eugenics and volitional sex determination had been included, and to some extent, already constructed, but they have finally been omitted in order to spare my readers further masses of material, which are not essential for this book.

On the other hand, however, I have not attempted what seems to me undue simplification of my theme or my treatment. If the book is to give the instruction of which my readers are in need, it must delve into the

quarry of human knowledge, and not pass lightly over its surface.

The accessory facts have been treated in appendices, following the chapters to which they are relevant. The bibliographical references have been listed under consecutive numerals at the end of the book.

To the best of my knowledge and belief, the utmost has been done to make my subject-matter intelligible.

I hope that its statements, arguments and suggestions may be received in the spirit in which they have been offered.

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FERTILITY AND STERILITY IN MARRIAGE

PART I

ETHICAL POSTULATES AND PRINCIPLES

CHAPTER I

INTRODUCTION. THE ETHICAL AND THEOLOGICAL ASPECTS. THE STANDPOINT OF THIS STUDY

I am conscious of a certain anxiety and reluctance now that at long last I have set myself to write this book.

This feeling might reasonably be attributed to the difficulty and intricacy of my theme, or to the indubitable fact that few groups of problems could be cited which contain so much material for disagreement and involve so much danger of misunderstanding, when treated in publicly accessible form. Yet this supposition would not be correct. The difficulty of any subject is no deterrent to one who has spent most of his life in its study and practice. And he who has endeavoured to reach a well-founded judgment of any problem, through conscientious investigation and careful consideration, does not go in fear of attacks, though he is well aware that such attacks can be vehement and even offensive, as is always the case in those controversies where instinct and emotion play the lead, however logically and rationally they may be clothed.

No! There are other reasons for my hesitation. I will enumerate them, both in order to relieve my own mind from their repressive influences and in order to acquaint readers of

this book with the attitude therein maintained, both in regard to crucial questions and towards the general ethical and theological points of view in matters of marriage and reproduction.* There are, however, many questions of extreme importance which can only be discussed in our later chapters. Our present summary is not meant to be exhaustive.

I must here once again treat a mainly medical subject in a manner helpful and acceptable to both doctors and laymen. Anyone who has set himself such a task knows its difficulty; a difficulty fully experienced by me in both "Ideal Marriage" and "Sex Hostility in Marriage," the two first volumes in this trilogy. There is a peculiar obstacle in the present case: I must not only deal with normal physiological and psychological material, but, in certain portions of the book, it will be necessary to make clear the significance of several morbid phenomena and to give some knowledge of how one should combat and cure such morbidities. These difficulties cannot honestly be evaded; I must endeavour to master them—and my readers must help me and themselves by doing the same, although (if they have not already some medical knowledge) this may not be altogether easy, and will demand concentrated attention.

For an understanding of medical facts is necessary in dealing with our problem of the voluntary control of fertility. Even if not necessary in regard to every detail in these pages, it is essential in respect of the main outlines; and these main outlines depend on a multiplicity of facts, *i.e.*, details.

It is probably accurate to suppose that readers of this book may be divided into three groups. The first group includes those who wish to know its contents for professional reasons,

* According to moral theologians, these two terms are identical. One of them writes to me: "There can be no contradiction between ethics, *i.e.*, moral philosophy and moral theology or indeed between any theological and philosophical truth. Exact study will always demonstrate the error of the philosophical truth." But there are philosophers whose ethics are founded on the dictates of conscience and individual sensibilities, whose opinions are diametrically opposed to ecclesiastical dogma.

or, at least, who think themselves obliged to read it for such reasons. The second group will consist of the merely curious and more or less libidinous ; and I hasten to warn them not to waste their time, as they will have to search far more thoroughly than they are wont to do and will not find what they are seeking, for it is not here. And the third group—doubtless also the largest ?—will surely be composed of married couples, husbands and wives, who wish to control and regulate the fertility of their union.

Well—such choice and control are not simple and easy—or at least far less simple and easy than most people think. A doctor can certainly suggest measures directed towards the result his patients desire ; he can even in many cases, give advice which, *if accurately carried out,* will probably or even certainly accomplish that desired result ; but it depends *on the accurate fulfilment of his instructions,* on the *consistent, persistent and exact application* of means to ends. This can be proved by daily average experience ; how disastrously often cases occur in which the means fail to accomplish the end ! This will become clear to all readers if they persevere to the end of our present treatise. They will also understand *why* I urge them not only to turn to the section in which they take special practical interest, but also to study the whole.

A further reason for hesitation is the necessity for again considering in detail the technical mechanism of sexual congress ; a subject of delicacy and one requiring the greatest possible conscious mental control and objectivity. But, in the nature of things, the sexual act is a most important link in the chain of events leading to the formation of a new individual and is, moreover, the *only one in this particular sequence of events, on which the participants can exercise direct influence and control.* In certain cases, this determining influence is simply limited to exercising or abstaining from coitus. But, in other cases, the decisive factor is not *whether* but *how* the act was accomplished. *This can be important in preventing a pregnancy and it can also be crucial when the intention is to bring about a conception at all costs.*

Up till quite recently, this subject was treated—or rather

not treated, but ignored—with a timidity which resembled superstitious terror. This feeling still exists in some cases, together with a caution and reserve which prevent many medical practitioners from speaking of, or even considering, the *importance of coital technique* in this aspect, as well as in all others. It will, therefore be essential to draw attention to this coital technique on various occasions and to give certain suggestions and elucidations, but these will be based on the contents of Volume I. " Ideal Marriage " : with which I shall assume my readers to be acquainted.

The main cause of my hesitation, and even of a certain *depression*, is a need for a parting of the ways. I must emphasise the difference of my outlook from that of organised religion ; and in my previous volumes it has been possible by choice of language and limitation of theme, to make positive suggestions which were wholly consonant with religious belief. It was possible to do this without denying or misrepresenting my own intimate convictions, as I am entirely persuaded—after prolonged consideration—that in *normal sexual relations there is complete consonance between physiological health and religious righteousness ;* indeed that " the sets of equations * ; *physiologically normal—divinely ordained*—morally good—ecclesiastically lawful (as with their exact opposites) are positively startling." †

In my opinion, religion is of enormous importance for individual happiness ; I consider religious belief an " Illusion," " Fiction " and " Vital Hypothesis " of the first rank, offering many human beings such help and support in the conduct of their lives, that, to them, life would be insupportable without such belief.

Definition of these three terms is necessary.

An " Illusion " is a concept, a mental picture, to which one believes reality to correspond, or which one fervently desires to see realised. In the realm of Art, an Illusion must necessarily contradict reality, but psychologists employ the term

* Quotation. (See Bibliography at end of this book.)

† " Ideal Marriage," (1) English Authorised and Unabridged Version, pp. 318–319. Dr. *Th. H. Van de Velde*, Trans. S. Browne. (Heinemann Medical Books, Ltd., London).

without pronouncing thereby on its truth or error. Illusions may be based on error, but are not necessarily so. History knows examples of cases where illusion has become reality. Illusion is essentially emotional; it arises from a profound wish or urge. In the words of *Siegmund Freud* [2]: "We term a Belief an Illusion, when wish fulfilment dominates in its mechanism, quite independently of its consonance or non-consonance with the world of Reality, just as an Illusion itself dispenses with proof."

The term "Fiction" is employed exclusively in the sense used by *Vaihinger*. We may define its sense, in our field, by the following quotation from *Vaihinger's* work [3]: "In the concept Fiction, we included not only minor theoretical processes, but elaborate ideals and visions such as the noblest human beings have formulated, and to which the finer element of humanity clings tenaciously. They will not permit us to tear these values from them—and we will not endeavour to do so. As practical 'fictions,' pragmatic principles, we leave such ideals untouched, but as abstract Truths they are dead or dying."

As to the term "Vital Hypothesis," I have derived this from the "Working Hypothesis" familiar in the experimental sciences.* An investigator who conducts a series of physiological experiments in the light of a "working hypothesis," does so on the assumption that the phenomena whose nature and interaction he wishes to discover, *are comprehensible as a certain sequence and from a certain point of view*. He proceeds *as if* his assumption were established as correct and arranges his tests on that basis. The religious believer who assumes the Truth of his particular religion and forms his life, his thoughts and standards, his crucial actions and daily habits on that assumption, is acting on precisely the same lines. Thus his faith, his religious belief, is the working hypothesis of Life for him; *i.e.*, his "Vital Hypothesis."

Thus far there is harmony and unanimity—but no further.

* Here, too, there is a cloud of witnesses. Long before the publication of *Vaihinger's* theory, which developed in 1876–79, and appeared as a philosophic system in 1911, many investigators had worked according to this principle.

The investigator tests his hypothesis by reality, to his utmost powers. He begins his researches with a preliminary assumption ; if this assumption is tested and proved—all the better, a speculation has become a demonstrated Theory. But, if his experiments prove the chain of cause and effect between the phenomena under investigation to be other than he thought, he lets his first hypothesis drop, advances a fresh hypothesis, if necessary, and searches until he can construct a theory which accords with observed facts.

But the believer does not test his assumptions by comparison with facts, he avoids doing so on principle, for his religion in itself forbids it. (I speak *generally*, though, of course, the various churches and sects differ in their degree of positiveness here.) In the interests of human happiness, the churches are, I think, justified : the less the average human being is visited by Doubt, the better for him, since Doubt in essentials is not only the enemy of Faith but of Peace of Mind. The " Credo quia absurdum " of the early Christians—the proclamation that religious dogmas are *outside* the realm of Reason, and above the authority of Reason ; that they need not be *understood*, but must be *felt* and *lived*—is at least as important for the human beings of to-day ; and as a " Vital Hypothesis " is as precious to the fervent believer as a good working hypothesis is to the experimentalist of the laboratory.

If we briefly inquire *why* Religion has such crucial importance for the individual, we find that this importance is a matter of wish-fulfilment ; and this wish-fulfilment is profoundly but directly connected with the narrower exact subject of my book. Humanity feels its *helplessness* before many processes of Nature and seeks protection, help, consolation—beyond Nature—from higher Powers. Humanity's desire for Justice (for " Natural Rights ") which Life continually disillusions and denies, becomes the hope for a supreme Justice which shall eventually be our portion ; the reliance on an almighty and all-tender, all-knowing and all-righteous Personification, who can fulfil the urge for permanence and happiness. Humanity faces the material Universe of objects and events, and feels tiny and helpless ;

its own origin, destiny and purpose are as mysterious as the origin, destiny and purpose of all other living creatures and of suns and atoms. Religion gives some answer to the questioning: "Why?" Humanity cannot accept the thought that death will be the end of consciousness and existence: the shadow of this thought is terrible, and how should it be otherwise to any living sentient creature, as the Urge to preserve life, to *live*, to continue is the mightiest and most constant of all? Religion meets this fear with the promise of Immortality: The fear is diminished, even abolished. "O Death, where is Thy Sting?" *

In this Faith the believer can go through life strong in certainty, where doubt and fear would undermine and torment. His eyes are fixed on Eternity. Can we conceive a greater wish-fulfilment?

Psychologically expressed, we know that all human effort is directed towards wish-fulfilment, and this wish to survive, to *go on living*, is the most ancient, powerful and permanent of human urges. Religion which meets this urge evidently satisfies an absolute primary *need* of the great majority of the human races.†

Anyone who weakens another's faith in any essential point, thereby takes away so much that it is difficult always and generally impossible to give any adequate substitute for that loss. Of this I am thoroughly convinced and have therefore specially sought to avoid—so far as possible in the earlier volumes of this series—all occasions of dispute or disobedience to the rules and doctrines of the various religious bodies to which many of my readers must belong. I have endeavoured to go as far as possible on the way marked out by and for believers, by their religious leaders and teachers, the Theologians.

I have fully explained *why* that unanimity was possible till now. In this book it is no longer possible in practical detail, though I firmly believe that my advice is in no wise opposed to the *spirit* of any religion. The reason of this divergence

* 1 Corinthians, xv. 55.

† Cf. The Old Testament promises of Isaiah xxv. 8; Hosea xiii. 14, and Paul's reference thereto: "Death is swallowed up in victory." (1 Corinthians xv. 55).

is the absolute prohibition by the Catholic Church of certain measures which as a doctor I consider unavoidable; and the very similar, though less definite and explicit attitude of the majority of Protestant theologians towards these measures and methods.

To be precise: there are two methods of procedure in dispute. One is " artificial fertilisation "—a medical method of promoting pregnancy which Catholic theology forbids, at least in one particular technique, and which as a medical practitioner, I believe it my duty to advise or use in certain cases. The second more important subject includes all methods of preventing conception (*i.e.*, contraception or birth control).

The Catholic Church and some Protestant theologians agree in condemning the intention of limiting the likelihood of impregnation in sexual congress by any procedure. They do not go so far as certain ethical teachers independent of all religious organizations, who condemn as immoral all and any coitus, even in marriage, which is not definitely intended to result in pregnancy and birth. For the Churches permit coitus when the wife is pregnant, when she has been deprived of the organs of reproduction as the result of illness and/or when she has lost the power to conceive. They permit also married couples to prevent pregnancy by absolute abstention from coitus.

Certain critics of this theological attitude lay stress on its inconsistency; I see their point of view but, *if the Catholic premises are once granted*, the detailed decisions are unassailable. It all depends on one's fundamental principles and premises. Fortunately I am not here concerned with theological technicalities; but it is necessary to defend the attitude I take as a medical practitioner, a psychologist and a consultant in intimate marriage difficulties, on the problem of abstinence and contraception.

Primarily, it cannot be too clearly understood that, if abstinence is to be effective in preventing conception it must be *permanent and complete abstinence.* This may seem obvious, but it is not by any means superfluous. The sexual impulse is so powerful, that given any opportunity, it can

easily drown all contrary resolutions and intentions like a tidal wave. And the conditions of married life give ample opportunity: For human weakness takes comfort in the delusion that "Only once is never"; "nothing can happen—it was only once"—only, as a rule, to find very soon that "something" not only *could* but *did* happen. Even if, by an exceptional circumstance, "nothing," *i.e.*, no impregnation occurred, there is the resultant anxiety, both the conscious fear and the subconscious dread. And the devastating effects of this anxiety on the whole nervous system of many women and many men, too, have been such as to make them suffer permanently, forming a large and appalling chapter in the case books of neurologists and of psychologically enlightened gynecologists. If the strain of abstinence proves unbearable for one or both spouses, they may have recourse to incomplete or definitely abnormal *habits* of gratification. In many of these there is an *appreciable danger of impregnation;* there is the *fear* of such impregnation, and there is the local influence of the particular deviation adopted, *plus* self-reproach and self-contempt in the case of devout believers, for such *deviations* are certainly opposed to religious teachings and theories

No. There is no middle path here. If husband and wife resolve to abstain from sexual intercourse because they consider this the only right and decent way of preventing pregnancy, then their resolution must be steadfast, unalterable and carried into execution without a weak or wild moment. Here the physician must be more absolute and sweeping in his advice than the priest in his commands: *any approach which might indicate sexual attraction or excite it, must be avoided.*

I would remind readers that, in this book, we are considering *marital* relationships only! And would add with all possible emphasis that, for some time I have considered complete sexual abstinence between husband and wife so injurious that I have never recommended it to my patients and will never so recommend it. Even in *very* rare cases in which persons of unusual self-control and force of will succeed in abstaining from sexual acts and *approaches* in married life,

there is an unmistakably bad effect on their whole mental and emotional nature. How would any other result be possible? The repression of emotions and the psychic deflections and transmutations necessary to enable such abstinence to persist, and the substitutions * or substitute gratifications which are almost inevitable to prevent collapse, lead, even under the most fortunate conditions, to a "psychic unbalance" which is manifested in many words and deeds of such victims of acute sexual starvation.

Total abstinence is supremely harmful to that double human unity, "the marriage of true minds," which is the real marriage; it crumbles and vanishes when sexual relationships are completely suppressed. Not only doctors and psychologists bear witness to this truth; it is uttered by those theologians who have not lost the capacity—or the wish—to see living human beings as they *are*, and who have the courage to stand steadfastly for what they know. Thus, one of the leaders of the Home Mission Movement feels himself obliged to declare: "I have not seen *one* marriage among those in which permanent abstinence was demanded, which could have stood this test without going to pieces under the strain." "Marriage is essentially sexual congress and companionship," writes another theologian, and he proceeds to admit that to forego such sexual expression means to sacrifice the value and meaning of marriage, that the cases in which the prevention of pregnancy involves such abstinence are not compatible with such value and significance and that, therefore, such abstinence can only have a fatal effect on this fundamental institution.

Abstinence from sexual intercourse within marriage as a means of preventing pregnancy generally proves inadequate as a contraceptive method. It is always injurious to both parties to the marriage, and sometimes very detrimental and is directly opposed to the purpose of the marriage tie, whose dual unity is thereby destroyed. Such abstinence

* "Substitute gratifications sometimes result in social achievements comparable to sublimations. But they may be distinguished from genuine sublimations by their reactive exaggeration and by a certain convulsive character." (4)

must not be demanded. Even the expressed determination to abstain from marital intercourse, over a long period, as a means of prevention, must be earnestly deprecated

Therefore we are faced with the choice between leaving parenthood to pure chance, or endeavouring to control it by science and artifice.

Current theology advocates the first line of action : *i.e.*, chance parenthood ; and condemns the second. We admit that many eminent persons agree with this condemnation, in writing and in speech. But there can be no doubt that the immense majority of married couples endeavour, in one way or another, to influence the possibility of parenthood at will. This is generally equivalent to narrowly limiting the number of their children.

If I am asked which extreme I think right and wise, the answer must be that I cannot endorse either.

I have no doubt whatever, that in many marriages to-day there is an *abuse* of contraceptive methods. That is to say that these contraceptive methods are used *in such a manner, to such an extent, and at such stages of joint life* that, instead of promoting mutual welfare and marital happiness, as their reckless addicts suppose, they seriously impair or undermine individual welfare and mutual happiness *in the long run.*

On the other hand, I am equally sure that only very few marriages can afford unrestricted parenthood without serious damage, which knowledge, thought and discrimination would have avoided. Everyone is, of course, familiar with the roseate traditions of family life in the days of our great-grandparents and earlier forbears : the happy parents, the clustering sheaves of young lives growing into vigorous adults ! But, in dwelling on this picture, our imagination is blind to its other side. We have to study old diaries and letters, or such statistics as are available, in order to realize *how many children in such a family—which would otherwise have doubled its numbers—died at birth or as babies, and how many wives died young, broken and bled to death by incessant maternity. What a large proportion of these patriar-*

chal families are found, on inspection of such sources, to be the children of one father by two or three successive mothers! The psychic and emotional suffering and waste is unimaginable. How much bewildered misery or keen anguish did not all this death, all this illness imply? How many valuable faculties and capacities were smashed or thrown away unused? Of course, the practical scientific knowledge of those times was inadequate to deal with the situation; we realize that knowledge had not given power of choice and therefore we are apt to see the good and ignore the evil. But we know to-day that—at least as a general rule, and in the majority of cases—things *can* be altered; and that an intelligent and responsible control of the results of physical marriage contributes very much to the diminution and alleviation of sickness and mortality, pain and waste; and that such "mortality and morbidity" of mothers and children alike are closely associated with frequent child-bearing.

There are still some numerous families and these are often very happy. But we must admit that this happiness is only likely when both physique and finances are vigorous and prosperous. Undoubtedly, the contemporary standard both of adequate physical fitness and adequate financial resources among educated persons is often absurdly exaggerated. But there is unquestionably a certain definite means limit or income limit, *necessary* for justice to new lives, even though this cannot be drawn "hard and fast" at any fixed sum, for any special case. And I consider it even more incontestable that there is a corresponding physical limit: a necessary reserve and output of *health, including that of the mother who bears, as well as that of the children to be borne.*

Therefore, in the light of present knowledge and resources, I maintain the moral obligation of married couples to aim seriously at controlling parenthood, both with reference to the health and welfare of the wife and mother and to the prospects of actual or potential children: and this must imply economic considerations as well. Of course, such a demand may easily be intentionally misinterpreted; experience has taught that with unsparing thoroughness. But

such excesses and distortions have not proved my case unfounded in reason, or in morals.

Control of parenthood, as regards numbers of births and intervals between births, is not necessarily the same as *excessive limitation*. The control of parenthood in actual practice is best manifested *by due intervals between births, i.e., between births and subsequent conceptions*. Children must not follow one another too closely.

As I know by experience that many readers expect a certain *precision* in advice on these matters, I would suggest that—*generally speaking*—three to four children are an adequate but not excessive number; that these children should be brought into the world at intervals of about two and a half years; and that the youngest should be born before the mother has completed her thirty-fifth year. These suggestions are *general;* under special conditions, including various types of disease, very different arrangements may be necessary.

In each individual case I consider it necessary to view and treat marital intercourse as independent of its physiological result in pregnancy and to give married couples the opportunity of choosing the latter at will. I shall be met by the argument that sexual intercourse without its natural result of impregnation, interrupts a physiological cycle and is neither normal nor beneficial. In the case of many of the methods in current use, I admit this to be true; some of these are, in my opinion, so intrinsically abnormal as to be wholly harmful. But there are other methods—although *none, so far, that does not involve certain minor exertions, unpleasantness or disadvantages*—which have hardly any effect on the natural reactions of sexual intercourse and which must be regarded as indicated, where limitation is advisable.

This is not the only department of human activity, in the biological or physical sphere, in which we are faced by a "choice of evils"; for we must dominate natural forces to some degree, if they are not to dominate and destroy us There are three roads before us: *none* is perfectly safe, smooth or satisfactory. Absolute abstinence, which is

thoroughly unphysiological, *i.e.*, unnatural; the acceptance of the unrestricted consequences of marital intercourse, which entails the probability of physical or financial ruin as the result of physiological excess; and the control of reproduction by prevention of pregnancy; which is the least of the three "evils," physiologically, as in other respects. And most married couples realize that this third alternative is the best.

. But this large and steadily increasing majority of husbands and wives comes into diametrical opposition to the beliefs proclaimed by an overwhelming but slowly diminishing majority of theologians; of religious leaders and teachers.

How is this opposition adjusted?

We must consider Catholic couples separately from Protestants. The former receive definite and very explicit instructions on these matters; the Protestants do not.

The Catholic directions as to conduct in marriage are extremely precise and detailed*; they state *what is permitted and what is forbidden. They demand that the husband and wife in coition should carefully refrain from any acts or intentions which might reduce the possibility of resultant impregnation.*

Catholic couples who are convinced of the need to control their fertility may be classified into five groups, on the basis of their reaction to this demand of their Church:

(1) Some give up their convictions and wishes and make no effort to control conception.

(2) Some resolve to abstain entirely from intercourse.

(3) Some attempt to limit possible conception and at the same time to obey their Church.

(4) Some leave their Church on these grounds.

(5) Some, finally, take the liberty of acting as they see fit in this respect, without doubting the doctrines or neglecting the Sacraments of their Church.

(1) The first group, devout and obedient, endeavour to

* Full particulars in *H. Noldin's* book,(5) Headings 72, 73, 74, 75, 76. Certain Latin passages are quoted in *Capellmann-Bergmann's* "Pastoral Medicine." (6) See Appendix to this Chapter and Bibliography.

support the results of unchecked procreation with the faith in Divine guidance and approval and the hope of reward in Heaven.

Of course, their sacrifice will be easier if the natural—constitutional—fertility of both partners is not extreme. But very few, even of this faithful minority, will continue steadfast if they realize that fresh pregnancies mean serious dangers to all concerned.

(2) As to the abstinent spouses: the Catholic authority, *Capellmann-Bergmann*, after stating that abstinence from coitus is the only licit method of attaining "facultative sterility" (*i.e.*, control of fertility) continues: "The recommendation of *complete and permanent* abstinence, however, would only be successful in the rarest instances, even where there were the most urgent medical indications against parentage. The advice given would either be ignored or only followed for a brief time." *

I entirely agree with the opinion just cited, and have made clear my further views on abstinence as a preventive, in the previous pages and volumes. But, before passing to Group 3, I would prefer to quote from the comments and prescriptions of this strictly Catholic authority on the subject of "Facultative Sterility."

"Facultative Sterility is indicated:

"(*a*) In all those conditions of wifely health in which medical experience teaches that pregnancy is unusually difficult or apt to shorten the natural term of life, *e.g.*, in cases of cardiac defects, advanced stages of chronic lung complaints, dropsy, ulcers and tumours of the lower abdomen, etc.

"(*b*) In conditions involving appreciable risk of death, *e.g.*, marked contraction of the pelvis, kidney disease, previous eclampsia, excessive hæmorrhages in previous confinements, etc.

"(*c*) In all acute or chronic diseases of the genital organs of the wife.

"(*d*) In all cases of too numerous and rapid pregnancies, which weaken the mother or prevent the due nourishment and care of the children.

"Medical opinion must decide in each case whether any of these contraindications are present.

"(*e*) Finally, we regard relative lack of means, or poverty as a cogent reason for permitting 'Facultative Sterility.'

* *Capellmann.* (7)

" Relative poverty we define as a *considerable* or *serious* disproportion between income and *necessary* expenditure."

Thus the devout Catholics and medical men who collaborate in the work from which I have quoted go a long way to meet us in cases (*d*) and (*e*). As a non-Catholic I see no need to add to their suggestions. They add : " Undoubtedly there are a number of cases in which temporary or permanent sterility appears necessary or desirable, owing to one or many of the above circumstances."

But as " Coitus Sterilis "—*i.e.*, intercourse with contraceptive methods—is forbidden, and as these authors, as we have seen, conclude that *permanent abstinence* in its exact sense, is impossible—they concede the expedient of *periodic abstinence.* They permit the performance of the sexual act at such times, and at such times only, when the possibility of conception is, *according to their opinion,* either excluded or very remote.

We refer to the means adopted by Group 3 of Catholic couples. *Capellmann* states his view as follows :

" It is known that there is the greatest likelihood of fertilization if and when coitus takes place in the first few days after the cessation of a monthly period. This probability diminishes with each following day, until a date is reached when impregnation is improbable. According to many authorities and our experience, this date or brief period is in the third week after the end of a menstruation. In the days immediately before the next menstruation, the probability of conception increases again, according to most authorities. It cannot be maintained that there is any time between two menstrual periods, in which impregnation is wholly impossible, but for some days it is so unlikely that it may be assumed to be impossible, in practice.

" The rules observed in order to attain ' facultative sterility ' must therefore be the following :

" Abstinence from coitus during a full fortnight, reckoned from the beginning of each menstrual period and again for three or four days before the next menstrual period. Exact practice of this rule, in our experience, gives as much certainty of sterility as any form of onanistic ' Coitus Sterilis.' " *

* Onanism, or the sin of Onan, is the term used in moral theology for coitus interruptus, which was the only original method of preventing conception in intercourse, and is still the most widely known. Since real " preventive methods " have come into use, the term " onanism " is applied to their use in coitus by writers of moral theology.

Thus far *Capellmann-Bergmann*, who has revised the latest editions of his work. He adds: "The above view has met much acceptance and has even been included as a certainty in moral treatises. But," as *Capellmann* himself points out, "*it gives no sort of guarantee.* Almost every doctor is in a position to cite cases to the contrary, from his own professional experience. This must, however, be again emphasized as otherwise there may be not only unwelcome surprises, but very sad results, as, for instance, in a case of *Glaucoma*, a morbid condition in which possible pregnancy was declared dangerous to the eyesight, and in which, accordingly, *the Spiritual director advised 'facultative sterility as appropriate. In spite of the most precise obedience to instructions, pregnancy ensued and had the deplorable consequence of blindness.*"

Bergmann proceeds to quote the sex specialist, *S. H. Ribbing*. *Ribbing* states: "the great majority of women may be impregnated at any day or time between menstrual periods." *Bergmann* concludes: "In those cases where serious dangers to life or health would result from pregnancy, *complete and permanent abstinence* must be exercised. But where there is good ground for *limiting* the number of children —we must at least make clear that *periodic abstinence*, as recommended by *Capellmann*, 'offers no guarantee of safety.'"

In the *nineteenth* edition of this treatise—which is, to date, the latest—there is a footnote referring to the new light shed on the chances of conception by *Siegel's* researches during the late War. *Bergmann* quite rightly remarks: "The observations made above have not yet been confirmed . . . we must await results." But, a recommendation based on *Siegel's* work and differing somewhat from *Capellmann's* conclusions, has been included in the official Catholic Manual of Moral Theology by *Noldin*. It is quoted here from the 1923 edition, and in translation from the Latin original, in full, as we consider it peculiarly significant.

"(*b*) As there is no permissible means of *preventing conception*, the spiritual director is allowed—in a prudent and discreet manner—to advise married couples who wish to refrain from engendering further children, to control themselves during the times in which conception more easily supervenes, but to con-

summate their marriage at other times, at which conception is infrequent.

" On the basis of medical experience during the late War, it may be said that conception occurs more easily from such coitus as is performed from the first day of menstruation till the twelfth day from then; and that the number of conceptions increases from the first day till the sixth and then remains level till the twelfth. From the twelfth day on, the number of conceptions rapidly diminishes, until the twenty-second day. From the twenty-second day until the onset of menstruation, a fertile coitus hardly occurs.

" (*c*) That this method of procedure is allowed, is apparent, not only from its intrinsic nature, but explicitly, by a decision of the Holy See.* The reasons for caution and discretion in its recommendation are, however, two:

" First, because this custom may in itself give the married persons occasion to deny and refuse their conjugal duty at any time, or to commit Onanism. Secondly, because this method is not certain, for experience proves that conception sometimes takes place within the specified period."

It is thus proved that moral theology permits " facultative sterility " and also *how* and *why*. And the eminent authority in this field, *J. P. Gury-Ballerini* [8] (in Part II., p. 917), contains a footnote, by *Ballerini*, justifying such temporary abstinence in these terms:

" Furthermore,† a more exact study of physiology has demonstrated that there are certain periods within which we may reasonably suppose that marital intercourse respectively will or will not result in engendering another being. It is already agreed that such a result cannot reasonably be hoped from the fourteenth day after the onset of menstruation, until the occurrence of the next period, *i.e.* that is, till the next onset of menstruation. It is not necessary to doubt here or to hesitate, in view of the great evil of the continual unnatural misuse of marriage and of the state of habitual sin in which such husbands remain; for such husbands can and must find the inconvenience of moderate abstinence easier, having regard both to the weakness of the flesh and to the justifiable fear of too numerous children. Nor

* The Sacra Pœnitentiaria replied on 16th June, 1880: "Married persons who consummate their marriages in the aforesaid manner are not to be hindered, and confessors are permitted, with due discretion, to suggest the method to such married persons as they have attempted, otherwise in vain, to dissuade from the sin of Onanism."

† Text under Appendix II. to this chapter.

may we doubt that the anxious soul of a devout wife will lead her spouse to more wholesome ways.

"If married couples are permitted, with mutual agreement, to remain permanently abstinent, or to abstain and defer the consummation of their marriage for years, twenty or thirty, or till an age when there is no further hope of progeny or, on the other hand and for another lawful purpose of marriage, even if all hope of progeny is extinguished, if the wife suffers from incurable sterility, (or) if she has become unable to conceive owing to advancing years; if for a just purpose and in accordance with the laws of Nature, the exercise of conjugal rights is allowed: what valid objection can there be to the observance of this rule (of periodic abstinence) with the aforesaid limits, by married couples, for the aforesaid purpose? Or what law is there to oblige them to perform sexual intercourse at *other* times and seasons?"

The *letter* of this moral theological line of reasoning (by which prevention of pregnancy by deliberate occasional and periodic abstinence becomes permissible) is technically flawless! But, according to my instinctive feeling, at least—it is actually a violation and contradiction of the whole principle (so definitely enunciated), whereby it is assumed to be morally wrong to procure oneself the pleasure and satisfaction of the *Actus Conjugalis*, with the deliberate intention of preventing a pregnancy during and by means of this act.

It appears to me that this moral principle is violated, *not* in the periods of abstinence, but in those during which the *act is performed, with the conscious purpose of making it sterile.**

It is not my intention to pursue this matter further, and I will merely put on record my view, as above. For the quotations I have submitted make clear that the authorities, who are called upon to guide the Catholic faithful in these details, have been driven by sheer necessity to make this concession—or evasion. Where indeed, and how, are they to take other refuge from the dilemma of their recognition of the need for limiting reproduction in many cases, on the one side, and the impossibility of absolute abstinence from normal marital coitus, on the other?

* Cf. *Noldin*, (5) *op. cit.*, p. 74.

But this refuge or evasion or means of escape is *thoroughly unreliable*—and therefore impracticable in just those cases where it is most needed; and this these theologians themselves admit. They admit it by the serious warnings with which they conclude their permission. They admit it by the *physiological discrepancies* (as to dates) contained in even the few sample quotations above! The joint authors of one leading treatise, *Drs. Capellmann* and *Bergmann*, obviously disagree here! The discrepancy becomes more patent on comparison of the text of the quotations given above with the most recent edition of *Noldin's* book (revised, after his death, by *Fr. A. Schmitt, S.J.*). Only four years have elapsed between the penultimate and the latest edition (1923–1927), yet *crucial* physiological details in the instructions given have been altered (the twelfth day becomes the fourteenth and the sixth the seventh, etc.) and the warning against over-confidence is made more stringent and emphatic. Thus, careful comparison of the successive editions of *Noldin's* work and the discussion by *Gury-Ballerini*, shows that the fourteenth day was first assumed by Moral Theology as the beginning of the " tempus ageneseos " ; then the term was shifted to the twelfth day and then again to the fourteenth, while, with further experience, doubt as to the *existence* of any such time steadily increased!

We shall return to this subject from a physiological standpoint and see—apart from, and independent of all considerations of moral theology, how far it is possible to assume the existence of a " tempus ageneseos," a period free from fertilization, in the interval between two menstruations. But it may be observed that the doubts of the Catholic moral and medical theologians cited above are proved to be very well founded by physiological research, and this research is the basis for my attitude of negation and repudiation of the " unsafe period."

Certain married couples attempt to reconcile the avoidance of pregnancy with the observance of the Catholic morals by the procedure termed *Abruptio copulæ ante seminatione;* that is, the cessation of intercourse before emission takes place. This procedure must not be confused with Coitus

Interruptus. The difference consists in the fact that in Coitus Interruptus there is male orgasm, with ejaculation outside the vagina ; in the *Abruptio copulæ* there is neither.* Coitus interruptus is explicitly and unequivocally condemned by the Catholic Church. But moral theologians are not unanimous in their judgment of what they often term *Copula sine effusione seminus ;* the cessation of coitus before male ejaculation takes place. *Capellmann-Bergmann's* work quotes opinions *pro* and *con,* but these learned authors themselves tend to disapprove. But *Noldin,* whose extremely detailed treatise may be regarded as decisive for the moral theology of the Age, considers *abruptio copulæ* no sin, provided it is performed by the agreement and consent of both spouses. Here *Noldin* is in agreement with *Liguori* (Liber VI., 918), whose " Theologia Moralis " was made authoritative by Pope Pius IX. and Pope Leo XIII. *Noldin's* opinion is :

" 2. To terminate acts of sexual intercourse already begun, before ejaculation takes place and without running the risk of ejaculation outside the vagina, is :

" (*a*) Grave sin, in case one of the marriage partners objects or resists, as it is wrong to deprive either husband or wife of their right to full marital satisfaction.

" (*b*) In cases of mutual agreement, it is no sin, in so far as there is good and reasonable cause for such action and the risk of seminal loss is avoided : for such action is to be regarded as equivalent to the contacts and caresses, obscene outside marriage, but permissible between spouses.

" At the present time, husbands are not infrequently in the habit of terminating intercourse before ejaculation ; this is done from real or alleged (imaginary) fear that further pregnancy might cause the death of the wife. Although they are to be strictly cautioned to avoid such actions, because of the risk of pollution (ejaculation), yet they cannot be wholly prohibited if the assurance is given that pollution (ejaculation) only happens very seldom.

" NOTA BENE : (*a*) The more this deplorable and detestable habit of prevention of pregnancy spreads, not only in the families

* The Vulgate describes the act of Onan as Res detestabilis, " an odious thing." The Holy See declared Coitus Interruptus " forbidden by natural law " in its decision of 21st May, 1851 ; and on a subsequent occasion, 19th April, 1853, as " intrinsecus malum," that is " intrinsically evil."

of the wealthy, but also among artizans and poor persons, the more does it become obviously necessary both in special instruction to the married and in the confessional, to explain that prevention of progeny is not in any case lawful and that abstinence is the only permissible way of avoiding progeny."

It is clear that *Noldin* does not hold the special technique of *abruptio* to be sinful, but that he does not recommend it : he even deprecates it, not only because he considers *evasion* of fertilization illicit, but also because of the risk that such attempts may result in " accidents," equivalent to coitus interruptus. I fully share this view and have further psycho-physiological reasons for dubiety. The method of *abruptio copulæ* may fail not only *theologically* but *materially*, not only in a premature ejaculation *in vacuo* but in an ejaculation *per vaginam*—with all its consequences.

Physiologically, *abruptio copulæ* is equivalent to Karezza. I have set forth the objections to Karezza in the first volume of this trilogy* and shall refer to it in the third section of the present volume. A relatively small number of married Catholics use *abruptio* as an intuitive and spontaneous way out of their labyrinth of conscientious difficulties. But *abruptio* is, in itself, not consonant with Catholic trends of thought, but was, on the contrary, originally recommended and practised especially by various sects and by individual ethical teachers who remained outside any religious organizations.

The differences of detail in the views of moral theologians have become more acute of late. In the most recent edition of *Noldin's* work, *A. Schmitt*, the reviser, omits the passage (on his seventy-third page) quoted above, stating copulation without any male ejaculation to be lawful, if both partners agree to it. On the other hand, *C. Telch*, in his Manual for Confessors (Anleitung für Beichtväter),[9] which is explicitly based on *Noldin's* conclusions, permits *abruptio copulæ* (on p. 133) as consonant with moral law.

Modern moral theologians tend to agree with *Telch*. They have learned the unreliability of the " safe period."

* " Ideal Marriage : Its Physiology and Technique," pp. 202, 203, 204. (Heinemann Medical Books, Ltd., London).

They therefore take refuge in recommending *abruptio*, and generally remind the wife that this method is more favourable to her than to her husband, as it permits her to attain full satisfaction without incurring mortal sin. *Telch's* remarks may be thus rendered in terms of modern physiology : *The wife probably does not offend gravely, if she attains to the full orgasm after her husband has withdrawn himself without having ejaculated.* This view has most interesting and significant implications in more than one direction. But medical men, basing their views on facts of physiology and psychology, cannot believe that many married couples could succeed in continual use of these methods without serious results to minds, bodies, or mutual affections.

The fourth group of Catholic married couples, under the classification suggested above, grows in number with every year. And this must be viewed as a misfortune, for it means serious uprooting of their religious (and generally their moral) views. But the fact itself is corroborated by authorities of all creeds—or none. To quote two examples among many from the work of eminent and earnest thinkers, deeply concerned about their people's welfare, let us refer to *H. W. Methorst* * and *A. Grotjahn.* On 1st September, 1927, at the International Population Conference at Geneva, the former attributed the reduction of population to many causes, of which the principal was the profound change which has taken place in religious and ethical attitudes. This change has made possible an individual and independent judgment. At every census everywhere there is an increase in the number of persons who declare that they do not belong to any recognized organization ; but the number of the half-hearted, who remain within their respective folds without accepting priestly authority and discipline, is far greater than that of the honest rebels, and it is incontestable that there are currents of ethical and religious opinion far less hostile to modern practice than the orthodox traditions of Rome or the Reformation. *A. Grotjahn* [10] † expresses

* The Director of the Bureau of International Statistics at the Hague.
† One of the most eminent German eugenists and racial hygenists.

himself in the same sense: "The restrictions of ecclesiastial dogma have become looser during recent decades and will, in all probability, continue to dwindle and relax. At the same time it is a separate question whether real religious impulse and the need for its satisfaction are alike perishing. Whether or not this be the case—the racial results are evident. In every stratum of the population there is a steady decrease of the toleration and acceptance of Church's interference in such intimate personal matters as the size of the family. Within some religious communions this process is comparatively slow, within others comparatively rapid; but it is uncheckable *and it will prevail.*"

I am of the opinion that the inclination of many modern persons to change their faith, or the outward forms and details of their faith—without becoming Freethinkers—is due to an unconscious compromise between their need for some institutional and ceremonial religion, and their resentment at dictation with respect to their personal—and chiefly their sexual—conduct. This particular position is far from being wholly modern, as may be seen from the famous letter of the Bishop of Le Mans to Pope Gregory XVI. in 1842! Bishop Bouvier complained of apostasy from the Church, but he also and especially pointed out that many of his flock who came regularly to confession as devout Catholics were no longer prepared to submit to traditional discipline in their married lives.

This is the exact position of the couples in the fifth category of my classification. How is it possible for Catholic married couples to retain their religious beliefs and accept the sacraments while, at the same time, having sexual intercourse with prevention of conception?

Their number cannot be small. The birth-rate among professing Catholics falls steadily; even though the number of those who leave the Catholic Church rises, though not to the same degree. *F. Lenz*[11] points out that among the traditionally Catholic Bavarians, four births was the average for each marriage in the year 1913. In 1920 the average was two. Of course, the dislocation and moral effects of the War were important factors in this result; but the decrease

is so remarkable, especially when compared with the number of definite and declared " apostasies " from the Catholic Church, that it can only mean that many otherwise practising Catholic couples are deliberately limiting their families ; and it is most unlikely that abstinence is their method of limitation.

Recent gynecological practice has taught me that such couples are far from rare. Among my Catholic patients I find many more who thus compromise between dogma and Nature, than who either break with the faith of their fathers on this issue, or strictly obey its commands. The exact psychological mechanism which enables them to compromise in this manner, has always been an interesting puzzle to me. I have only rarely ventured to ask questions of my patients on the subject, and, when I have made inquiries, have done so indirectly in order not to provoke subconscious conflicts and bring distressing doubt and remorse into active play, thus causing further harm.

Subsequent wider experience among patients who express themselves much more frankly than they would do to a physician of their own faith, have supplied an answer. The majority of such compromisers are more or less " poor in spirit." They succeed in obliterating all remembrance of their Church's demands : but the thoughtful among them have a hard mental struggle, for they cannot pretend that things are not what they know that they are. Slowly and painfully, they attain to a clear recognition of their own consciences' dictates. One of them who—in other respects—was a devout practising Catholic, wrote to me : " My way out of the difficulty is by consulting my own sense of right and wrong ; I consider contraception in marriage right, so it is *right for me.*" Of course, morally questionable or inferior minds would go on from such a standpoint to regard everything as lawful, but the personality of the writer of the letter, with which I am well acquainted, is a guarantee of his own sincerity and good faith. *The practical consequence of regarding contraception as no sin, is that there is no need to confess it to the priest,* but what of the Confessor : surely he is bound to inquire ?

The famous letter of Monseigneur Bouvier, Bishop of Le Mans, in 1842, is relevant here. I translate it as follows :

" Enquiry of the Very Reverend Monseigneur Bouvier, Bishop of Le Mans, as to the method of procedure of Confessors towards married persons in the matter of onanism :

" Holy Father, the Bishop of Le Mans in France, makes profound obeisance at the feet of Your Holiness and most humbly submits that :

" Almost all young married couples desire not to have many children : yet they are not able to abstain from marital congress in a moral and lawful manner. When their Fathers Confessor interrogate them as to their manner of using conjugal rights, they are in the habit of taking serious offence and, on being exhorted and reproved, they can neither be persuaded to refrain from conjugal relations, nor to produce more numerous offspring.

" They then murmur against their spiritual director, neglect the sacraments of the Church, absent themselves from Confession and from Mass, and give a bad example to children, servants and other faithful Christians. Serious damage results to the Faith.

" The number of those who come to confession decreases year by year in many places and especially for the reasons aforesaid, as is not questioned by such ecclesiastics as are especially eminent in knowledge, experience and conscientiousness.

" Many ask : ' How did the Fathers Confessor proceed formerly ? The number of children born in each marriage was not greater than to-day, the spouses were not more free from sin, nevertheless they came to the prescribed yearly confession and communion at Easter.'

" All will readily admit that marital infidelity and attempts to procure abortion are both mortal sin. But they can hardly, or more often not at all, be persuaded that they are bound, under penalty of mortal sin, either to practise perfect chastity in marriage or to accept the risk of numerous children.

" Therefore the aforesaid Bishop of Le Mans fearing that grave evils can arise, has recourse, in his uncertainty, to Your Holiness and asks, much in doubt :

" 1. Whether those married persons who use marriage in such a manner as to prevent conception commit a moral offence in so doing ?

" 2. Whether, if the act is to be regarded as morally reprehensible, those married persons who do not accuse themselves in confession, of so acting, are to be considered as innocent of evil intentions, whereby they would be free from mortal sin ?

" 3. Whether the usage of some Fathers Confessor is to be justified, namely, abstention from enquiries as to the manner

and methods of using conjugal rights, lest the married persons be offended thereby ?

The Sacra Pœnitentiaria replies, after full consideration of the points submitted :

" 1. (This is here irrelevant and contains a condemnation of Coitus Interruptus).*

" The answers to Questions 2 and 3 are as follow :

" 2. That the Father Confessor should bear in mind that sacred things should be treated as sacred. And also the words of St. Alphonso Liguori, the learned divine of most experience in these matters, who says : (S. IV., n. 41)

> " ' As to the sins of married persons in the matter of conjugal duties, the Father Confessor is not always obliged to ask women whether they have performed these duties, nor is it seemly so to do ; he can only enquire, with all possible modesty, and reserve whether they have obeyed their husbands in all things. As to the rest, let him be silent, unless he should be asked.'
> (Given at Rome by the Sacra Pœnitentiaria, 8th June, 1842)."

This attitude is still accepted to-day, for Liguori's magnum opus : " Theologia Moralis " has lost none of its authority and is supported by the opinion of *Noldin*, under No. 76 (pp. 85–86) of the book to which we have already frequently referred. *It is clear that the individual consciences of married persons decide the amount and nature of what they reveal in confession about their sexual life, and the individual conscience of the spiritual director decides what he considers necessary or decent to ask.*

The most recent Papal Encyclical " Casti Connubri " has just closed this facit permission to apply individual conscience and judgment. All compromise and circulation have been refused.

Among Catholics, the ecclesiastical authorities and clergy have a clear and definite rule in these matters, and the difficulties fall wholly to the lot of such of their flocks who cannot or will not submit. Among Protestants of all confessions, these positions are, more or less, reversed ; official

* The whole document refers only to Coitus Interruptus, which was almost the only preventive method in use at that time.

Protestantism simply ignores family limitation. But the champions and representatives of " the Ethics of Protestant Christianity " are involved in difficulties at once, and the main body of Protestants are not given either explicit guidance or inconvenient pressure, one way or another, by their Creed.

I would refer to the final chapter of my book : " Ideal Marriage." Individual Protestants are supposed to be answerable only to their consciences, in the sex-relationships of marriage ; but, in practice, the rule is one of two extremes : either complete abstention as a preventive, or full use of contraceptives.

Theological circles in the various Protestant Sects tend to revert to the " ideal " of abstinence. In this connection it is helpful to refer to the objections raised by *Heinrich Wichern*,[12] author of " Sexualethik und Bevölkerungspolitik " (Sex Ethics and Population Policy). I have already stressed the importance of ultimate purpose and intention ; *Wichern* also says : " It really is not of basic importance what method is employed, but *in what spirit and intention.* Sexual abstinence has this peculiar difference from all other possible alternatives : its exercise demands continual moral effort in most cases. But in its *practical effect,* abstinence is also a method of limiting or preventing births and, as such, does not necessarily demand our approval as between married persons. It would be false and unpsychological to deny that ignoble motives may be decisive in securing abstinence, as well as finer considerations. Both Catholic and Evangelical moralists appear to me to leave this possibility too much out of account."

Wichern raises another highly significant point. In dismissing *Coitus interruptus*, he suggests that " perhaps no method (of birth control) under discussion so thoroughly contravenes the whole purpose of marriage, *which frustrates both vital creation and mutual communion.* And yet, as I have had (medical) professional occasion to observe, this particular method appears to be tolerated or connived at by the Church."

My own experience agrees with that of *Wichern.* I have

been surprised by the tendency, both among Catholics and Protestants, to judge coitus interruptus more leniently than all other contraceptive methods.

It seems inexplicable that the typical and specific sin of Onan, the only contraceptive mentioned and explicitly condemned in the Scriptures, the method which is more violently opposed to natural instinct than any other—should be the one most widely tolerated, both among the masses and the educated classes, and less reprobated by the theologians than any other more active methods of birth control? *

More active methods—this is perhaps the key. It cannot be denied that anyone who did not fully grasp the whole process of intercourse and conception might be inclined to think that *activity* implied something *worse*, more reprehensible and "unnatural" than *passivity*. I wholly dissent from this view; but the average person does not understand that activity and passivity are here relative and incommensurable. But contraceptives require thought and preparation and precision beforehand—qualities which the average person dislikes, especially in the sexual sphere.

To return to the Protestant attitude towards total conjugal abstinence—which is emphasized and put on a pedestal, although, there too, leaders and teachers are well aware of the difficulties. Here too, we have the implicit, inarticulate, often half-conscious "belief" that *abstention from action*, being *passive*, is a *lesser* "sin" than *action*.

And we have here a recrudescence of early Christian Asceticism; of the negative attitude conspicuously expressed in history by Calvin and the Puritans. And in many cases there is doubtless the unconscious urge to conciliate God, by a sacrifice akin to fasting and scourging. But there is also a conscious motive of some force. The theologians who have achieved a certain breadth of view and human charity fear the judgment of "Christian moral zealots." They fear the stigma of moral inferiority—and

* See in Appendix, the remarks of the "Priest of the Church of England." (13)

laxity ! And those among them who are most susceptible to these fears, *sin against the truth by silence*. They ignore the whole enormous problem, but they do not annihilate it. Others, however, dare to witness to their belief. *E. K. Knabe* [14] gives testimony with such impressive earnestness and, in his final words, with such beauty and insight, that I cannot do better than quote :

" For every follower of Christ who is normal in mind and body, there is the same profound conflict as for the non-Christian ; the *libido sexualis* is more profuse and more insistent than is necessary merely to ensure the continuance of the race and it causes conditions and conflicts with which our Reason cannot be reconciled. This mighty urge is indeed *reproductive* in its final results, regarded as a whole, but in the cure of souls, we meet again and again, devout and tender hearts and noble minds in whom we must realize that the incentive to union is not so much the thought of the child, as the wish to be all in all to and in one another ; to become one flesh and one soul. In every Christian community, there are minorities who consider this *intense mutuality* a degeneracy and would only permit an embrace if man and wife had first prayed that it might be fruitful. But there are others among our brethren, for whom all profound experiences of the soul, sorrows or joys, all the visions they behold of Nature's glories, all the glories of the mind of man, in art or song or poetry—for whom all these vivid and splendid things make the sense of *oneness*, of *belonging together*, so overwhelming that they are drawn together in the most vivid and splendid of all human sensations. And so a dread falls upon them, as they think of what may result from an embrace and of the duties for which they are not competent : and indignation and reproof are no cure for such dread."

Many of my readers will perhaps agree with me in marvelling that the man who wrote those words could, three pages further, express himself as follows :

" The ' Ideal ' is and remains abstinence, in those cases where pregnancy would involve such damage that it is contraindicated. But, as in our pastoral work, we have, unfortunately, not always to do with ' hundred-per-cent ' Christians."

I value the author of the first quotation so highly that he will perhaps pardon me explaining the second quotation, as based upon a certain embarrassment, a sub-conscious

fear of being regarded as "less than a hundred per cent. Christian" by the moral zealots of the Christian Churches . . . ?

For there are moral zealots, and they are conspicuous among Protestant sects; and among both Protestants and Catholics, zealotry is not confined to theologians; it is often found among doctors as well! And if we try to trace the reason of this zealotry, we shall cease to wonder at its existence. But the topic is irrelevant to our present work, especially as the medico-religious zealots have no power of checking or suppressing the expression of other views among their colleagues.

Among Protestant theologians, on the other hand, such suppression is not only *possible* but a very pressing evil. *It almost amounts to persecution.* The careful perusal of relevant periodicals, leaflets, pamphlets, Congress reports and books has convinced me that the few theologians who dare to stand against the stream have a very hard time of it. The dominant tendency is still that so notably recorded by the *Rev. Gottfried Weymann* [15] when he wrote:

"We are often told that Christian morality knows only two lawful ways: either to trust in God's will, and fulfil oneself in marriage, year by year, leaving the issue to His Mercy—as our forefathers did—or *Abstinence.* How shall we decide? Reverent trust in God's will is, indeed, basic in Christian ethics, but such trust in no wise releases us from the duty of careful *thought and forethought, of prudent action and if necessary of contrivance and modification.*"

Abstinence then? *Weymann* clearly demonstrates that there is no final solution there (in spite of his reservation: "I admit that every serious-minded person will endeavour to practise it in marriage"): for, according to the creative scheme of things, this deeply rooted urge lives and seethes in all emotionally normal and physically mature humanity, and finds continual stimulus in the close quarters of most married lives, even among the less carnal and more intellectual types. Abstinence may deny—it does not destroy. "In my humble opinion, those who dispute this watch life and character through roseate glasses, deceiving both

themselves and others." *Therefore, I advocate the use of preventive methods, with whole-hearted conviction.* Their right usage is a blessing, a support and comfort. They preserve many persons from the sin of murder on the unborn child; they prevent the multiplication of lives which are eugenically and racially undesirable as well as unwelcome in the ethical and social scheme; they save womanhood from the excessively unnatural and unæsthetic interference and interruption of pregnancy with its *sequelæ;* they save both partners from the self-torment of an abstinence opposed alike to the purpose of nature and of marriage. And it seems to me that if the Church would but proclaim this truth with holy dignity and reverence, the misuse of knowledge will not be increased, but many, on the contrary, will be led to know and govern themselves; protective dykes against evil will not be overthrown, but built up again; and the moral credit of the Churches and the Gospels in the world of men will grow and thrive.

I need hardly express my entire agreement. Unfortunately, there seems little prospect that the *Rev. Weymann's* wish will soon materialize. His article appeared in April, 1925; and in the same month there was a Conference of Home Missions in *Dresden,* where the Agenda included consideration of "The Marriage Problem of the Present Day and Evangelical Morals." The chief speaker was a medical man, *Dr. Kirstein* of Bremen. I quote a passage from his address, illustrative of his whole attitude, in the appendix to this chapter and, as I wish to avoid polemics, I abstain from comment. For those of my readers who avoid appendices and arguments, let it suffice to say that *Dr. Kirstein* violently resists the suggestion that contraceptives may be morally lawful, and only recognizes abstinence as a preventive method worthy of Christians. His attitude is, of course, in accord with accepted traditions.

The reports of the ensuing debate show that *no one supported Weymann's view.* Nay, more: many of the men and women among the speakers expressed themselves against him in terms which left no room for doubt as to their feelings, and it is easy to read more between the lines. And

there was a further circumstance which makes an outside critic sorry and somewhat repels him. The only other person present who had publicly defended artificial limitation—under certain conditions—Pastor *Theodor Haug*, of Tübingen, whose article on "Marriage Difficulties and Christian Morality" [16] had raised the whole controversy—saw fit to emphasize, not his *points of agreement* with Weymann but his *differences* in regard to this crucial problem of abstinence. The relevant quotation is in the appendix to this chapter.

Thus we find, on the one hand, the typical Protestant weakness of loud and emphatic expression on points of dispute, and on the other hand tradition, voiced with tough and harsh persistence. A tiny minority, who disagree among themselves, and big battalions opposing them. On the one side the faithful few, the pioneers of a new concept of morality and Christianity, in sex and parenthood; and against them, not only those who honestly endeavour to put their traditional views into practice in marriage (and the numbers who express an opinion which their practice does not respect or support !) but the hundreds of thousands of dumb Christians who agree with Weymann in their hearts and homes, but in public are silent and intentionally give the impression of preferring abstinence to contraception ! The persuasive recruiting powers of the pioneers were indeed heavily handicapped, apart from the apparent novelty of their views in "Christian Circles." It is perhaps comprehensible that pioneers should shrink from hearing the substance of their own declarations, underlined by others, in such controversy ! It may be tactically justifiable to emphasize agreement with the majority in order to avoid shocking and needless offending, in the hope of persuading gradually *; of course, this is a theoretically tenable position. But—but——.

What does this hesitance amount to in practical ethics ? Only in very isolated and exceptional cases can married

* In order to avoid misunderstanding, I would say that these comments are in no sense reflections on the authors cited above.

couples find relevant light and comfort in the advice of their spiritual pastors ! And those who cry aloud for help in their deep distress are fed with a certain kind of *platitude*—(I refer inquirers to the reports of the Dresden Home Mission Conference)—which bring them not a hair's breadth further, or with an arbitrary command to abstain.*

These people suffer. They are, in the true sense, etymologically and actually, *patients* in their psychical conflicts, and bodily disturbances. And they come to us, to the medical profession, for the relief and guidance which have been refused them. But, if the medical profession undertakes this " cure of souls," it also has the obligation to give practical help in contraception. I consider it wrong to give such help and advice without considering mental psychic and emotional factors. I consider such procedure wrong because it is psychically dangerous in its possible results. *People who use contraceptives should know and understand why they use them, and for what purpose.* This should be discussed.

But it is at least equally wrong, in my opinion, for a medical man to refuse all information or advice in these matters, out of exaggerated self-esteem or self-importance. He has the justification that this type of practice is anything but pleasant and that a doctor who " has his proper pride " would certainly not wish to build up a practice of contraceptive patients exclusively. But the risk of this depends on his own attitude to the problem. Justly approached and treated with due reverent care, this type of practice has as much blessing and satisfaction, for both doctor and patient, as any other. The basic problems involved are at least as vitally important as in any other crises which the medical man is called upon to face and overcome.

It is, finally, equally mistaken and unfair for a doctor to gratify his own private convictions, and sacrifice his patients' lives and health to his own principles, by recommending prolonged abstinence in cases where conception would be

* It is interesting to note that since the original of these words was written (in 1929) a Minority of Anglican Bishops, namely 67, voted in favour of Continence in Marriage, except for procreation. The unmarried Bishops appear to have held this view most strongly.

dangerous. Such advice is wrong psychologically and physiologically, and can only harm in the long run.

Such doctors as do not feel themselves bound by religious dogmas have, therefore, I think, very definite and imperative duties, and I shall endeavour not to evade such duties. The inhibitions associated with the subject must be faced and overcome, and the unpleasant consequences which may arise from the fulfilment of such duties must be borne with equanimity.

APPENDICES TO CHAPTER I

I. *Noldin*, De sexto praecepto et de usu matrimonii. *Editio XIX. et XX.* (1923), p. 85.

§ 75. Media cavendi onanismi

(*b*) Cum nullum existat licitum medium impediendae generationis, confessarius coniugibus, qui ulteriorem prolis generationem praecavere volunt, suadere potest, caute tamen et prudenter, ut eo tempore, quo conceptio facilius accidit, se contineant, alio vero tempore, quo conceptio raro accidit, matrimonio utantur.

Ratione habita experientiae, quam tempore ultimi belli fecerant medici, dicendum est, conceptionem facilius accidere ex copulis habitis a die menstruationis usque ad diem duodecimum, et quidem ita, ut numerus conceptionum crescat a die primo usque ad diem sextum et postea aequalis permaneat usque ad diem duodecimum. A die duodecimo numerus conceptionum celeriter minuitur usque ad diem vigesimum secundum, ab hoc die usque ad menstruationem vix ulla amplius habetur copula fecunda.*

(*c*) Hunc modum agendi licitum esse non solum ex rei natura patet, cum nihil fiat, quod sit contra finem matrimonii, verum etiam ex declaratione s. sedis exploratum est.† Ratio autem, ob quam *caute* solum et *prudenter* insinuanda sit haec praxis, duplex est, quia ipsa coniugibus ansam dare potest quovis tempore vel negandi debitum vel committendi

* In the original this also is printed in smaller type.

† S. Poenitentiaria 16 jun. 1880 respondit: Coniuges praedicto modo matrimonio utentes inquietandos non esse, posseque confessarium sententiam, de qua agitur, illis coniugibus, caute tamen, insinuare, quos alia ratione a detestabili onanismi crimine abducere frustra tentaverit.

onanismum, tum quia hoc medium certum non est : experientia enim constat conceptionem quandoque etiam hoc tempore locum habere.

In the new edition, edited (1927), after the death of *Noldin*, by *A. Schmitt*, S.J., § 75, (*b*) and (*c*) read as follows (I have printed his alterations in italics) :

(*b*) cum nullum existat licitum medium impediendae generationis, confessarius coniugibus, qui ulteriorem prolis generationem praecavere volunt, suadere potest, caute tamen et prudenter, ut eo tempore, quo conceptio facilius accidit, se contineant, alio vero tempore, quo conceptio raro accidit, matrimonio utantur.

Ratione habita experientiae, quam tempore ultimi belli fecerant medici, quidam dicunt conceptionem facilius accidere ex copulis habitis a die menstruationis usque ad diem *quartodecimum*, et quidem ita, ut numerus conceptionum crescat a die primo usque ad diem *quartodecimum*. A die *quartodecimo* numerum conceptionum celeriter minui in diem vigesimum secundum. *Aliivero totam hanc theoriam falsam declarant.*

(*c*) Hunc modum agendi licitum esse non solum ex rei natura patet, *cum actus in se obiective sit ordinatus*, verum ex declaratione s. sedis exploratum est. Ratio autem, ob quam caute solum et prudenter insinuanda sit haec praxis, duplex est, tum quia ipsa coniugibus ansam dare potest quovis tempore vel committendi onanismum, tum quia hoc medium *in omnibus coniugibus* certum non est : experientia enim constat conceptionem quandoque etiam hoc tempore locum habere. *Immo, si falsa est theoria exposita, omnino omittendum est tale consilium*[17].

II. " Compendium Theologiae Moralis." *P. Johanni Petri Gury S. J. ab auctore recognitum et* Antonii Ballerini *eiusdem societatis in Collegio Romano professoris adnotationibus locupletatum. Editio tertia. Novis curis expolitior et auctior praesertim responsionibus ad vindicias Alphonsianas. Tomus secundus. Romae ex typographia polyglotta S. C. De Propaganda Fide MDCCCLXXV.*

Porro post accuratiora physiologiae studia iam constat, sua stata esse tempora, quibus e coniugali congressu sperari

aut non sperari effectus generationis possit: et tamquam exploratum iam habetur, sperari illum effectum non posse a quartodecimo die post incepta menstrua usque ad subsequentis epochae finem, id est ad sequentium usque menstruorum recursum. Cum itaque perspicuum sit, prae gravissimo malo, quod evidens cernitur in iugi matrimonii abusu contra naturam, atque adeo in perpetuo illo, quo mersus maritus iacet, statu peccati, levius id si quoque marito videri posse ac debere mediocris illius abstinentiae incommodum, quod at tantum avertendum malum sufficit, et simul prospicit tum carnis infirmitati, tum iusto numerosioris prolis timori; non desperandum sane, neque dubitandum, quin sollicita piae uxoris cura ad saniora consilia maritum sit adductura. Caeterum si coniugibus licet perpetuam ex communi utriusque consensu servare continentiam; si coniugibus licet continentiam servare ac matrimonii consummationem differe ad annos viginti aut triginta seu ad eam usque aetatem, qua nulla prolis spes iam supersit; iterum vero, si in alium legitimum matrimonii finem, et si omnis spes prolis absit, licet tamen iusta de causa et servato naturae ordine coniugalibus iuribus uti, tum quando uxor certa sterilitate laborat, tum quando ob aetatem provectam ad concipiendum facta est prorsus inhabilis; quid demum prohibeat, quominus coniuges in finem superius dictum continentiam secundum normam ac limites praedictos servent? Aut qua demum lege ad congrediendum alio tempore ipsos adstringi dicemus?

III. *From Noldin, De sexto praecepto et de usu matrimonii,* § 73, p. 81—83

2. Inceptam copulam abrumpere, antequam semen effundatur, sine proximo periculo illius effundendi extra uxoris vaginam, (*a*) alterutra parte invita grave peccatum est, quia est contra ius, quod altera pars habet ad copulam perfectam; (*b*) si ambo consentiunt peccatum non est, dummodo adsit rationabilis causa ita agendi et exclusum sit periculum effundendi seminis, quia eiusmodi copula est ad instar tactus impudici, qui inter coniuges liciti sunt.

Hodie non raro accidit, ut viri ex vero aut vano timore, ne uxor peritura sit, si iterum concipiat, inchoatam copulam ante seminis effusionem abrumpant. Quamvis hortandi sint, ut propter periculum pollutionis ab huiusmodi re abstineant, si tamen asseverunt raro tantum sequi pollutionem, id eis prohiberi nequit.

Nota. a. Quo magis haec lugenda et detestanda praxis, qualis est *prohibitio prolis*, etiam in Germania non solum in divitum sed etiam in opificum et pauperum familiis invalescit, eo magis apparet necessitas tum in examine sponsorum tum in confessionali aperte declarandi prohibitionem prolis in nullo unquam casu licitam evadere, et abstinentiam unicum esse medium licitum praecavendae prolis. Etcetera.

IV. *From Telch,* "Epitome theologiae moralis," p. 133.

5° *Licita in copula coniugali:* si (*a*) vir cum consensu uxoris et ex iusta causa ante seminationem se *retrahit*, si hoc facere posset, quin eo se exponat proximo periculo pollutionis, quia sic est actus luxuriae mutuus; cfr. 6°;

The last words contain the motive for the liberty given.

Under No. 6 (p. 134) we find the further argument for this motive in the following sentences:

Mutui actus luxuriae *externi*, etiam perfecti, *i.e.*, coniuncti cum delectatione venerea coniugibus liciti sunt, quamvis fiant ex intentione captandi delectationem veneream et sine intentione copulam coniugalem habendi, dummodo non excedant mensuram et modum a ratione praescriptum et exclusum sit proximum periculum pollutionis viri, quia sicut individuo humano voluptas ex cibo et potu, ita coniugibus, quibus incumbit officium conservandae speciei humanae, delectatio venerea mutua habita licita est; cfr. pag. 419, n. 35. Immo etiam cum proximo periculo pollutionis illi actus liciti sunt, si exercentur ex iusta causa (quae fere semper adest: s. g. sedatio concupiscentiae, compensatio quaedam pro abstinentia ab actu coniugali ob numerosam prolem, manifestatio amoris etc.), modo desit proximum periculum consensus nec eam consentiatur, quando evenit; cfr. supra n. 7; possunt tamen relinqui in bona fide, si consensum licitum habent.

V. *Original text of letter by Monseigneur Bouvier, Bishop of Le Mans:*

Dissertatio in sextum Decalogi praeceptum ; Supplementum ad tractatum de matrimonio ; auctore I. B. *Bouvier* Episcopo Cenomanensi ; XIIa ed. ; Parisiis 1849, pp. 179—182.

Beatissime Pater

Episcopus Cenomanensis in Galliis ad pedes Sanctitutis Vestrae summa cum reverentia provolutus, ea quae sequuntur, humillime repraesentat.

Fere omnes iuniores sponsi numerosiorem prolem habere nolunt, et tamen ab actu coniugali abstinere moraliter nequeunt.

A confessariis interrogati circa modum quo iuribus matrimonii utuntur, graviter communius offendi solent ; et moniti, nec ab actu coniugali temperant, nec nimiam prolis multiplicationam determinari queunt.

Tunc adversus Confessarios mussitantes, Sacramenta Poenitentiae et Eucharistiae derelinquunt, malum praebent exemplum liberis, famulis, aliisque Christi fidelibus ; lugendum inde oritur Religionis detrimentum.

Numerus eorum, qui ad sacrum Poenitentiae Tribunal accedunt, multis in locis ab anno in annum decrescit praesertim ob hanc causam, fatentibus plerisque Parochis pietate, scientia et experientia magis conspicuis.

Quomodo ergo olim agebant Confessarii ? aiunt multi. Non plures quam hodie communiter nascebantur liberi ex singulis matrimoniis, coniuges non erant castiores, et nihilominus praeceptis annuae Confessionis ac Communionis Paschalis non deerant.

Omnes libenter admittunt, infidelitatem erga compartem, et abortus attentationem maximum esse peccatum. At vix ac ne vix quidem persuaderi possunt, se teneri sub peccato mortali, aut perfectam in matrimonio servare castitatem, aut incurrere periculum innumeram generandi prolem.

Praefatus Cenomanensis Episcopus ingentia hinc obventura esse mala praevidens et anxietate turbatus a Beatitudine Vestra sollicite exquirit :

1° An coniuges, qui matrimonio eo utuntur modo, ut conceptionem praecaveant, actum per se moraliter * malum exerceant ?

2° Si actus habendus sit ut per se moraliter malus, an coniuges de illo se non accusantes considerari possint tamquam in ea constituti bona fide, quae eos a gravi culpa excuset ?

3° An probanda sit agendi ratio confessariorum, qui, ne coniugatos offendant, illos circa modum, quo iuribus matrimonii utuntur, non interrogant ?

Responsio.

S. Poenitentiaria, mature perpensis propositis quaestionibus, ad (1) respondet : Cum tota actus inordinatio ex viri malitia procedat, qui, loco consummandi, retrahit se et extra vas effundit ; ideo, si mulier post debitas admoniones nihil proficiat, vir autem instet minando verbera aut mortem, poterit ipsa (ut probati theologi docent) citra peccatum simpliciter permittere,† idque ex gravi causa, quae eam excuset ; quoniam charitas, qua illud impedire tenetur, cum tanto incommodo non obligat.

Ad (2) autem et (3) respondet : Quod praefatus Confessarius in mentem revocet adagium illud sancta sancte esse tractanda ; atque etiam perpendat verba S. Alphonsi de Ligorio, viri docti et harum rerum peritissimi, qui in Praxi Confessarii § 4 n. 41 inquit : Circa autem peccata coniugum respectu ad debitum maritale, ordinarie loquendo, Confessarius non tenetur, nec decet interrogare, nisi uxores, an illud reddiderint, modestiori modo quo possit . . . .‡ De

* In the text of *Bouvier's* work (at least in the copy at the Bibliothèque Nationale, Paris) *moraliter* is not given, but *mortaliter*. On the other hand, we find in the copies of *Gury-Ballerini's* [8] Compendium, which are in the German Libraries, the word *moraliter* in the copy of *Bouvier's* letter (No. 929). As it seems to me that this word is the correct one, I have kept to this in the translation, assuming the copy in Paris contains a printer's error.

† Instead of "citra peccatum simpliciter permittere," as is given in *Gury-Ballerini's* Compendium, we find in *Bouvier's* own work : "citra peccatum passive se praebere, cum in iis rerum adiunctis, ipsa viri peccatum simpliciter permittat."

‡ Instead of the points, which the Poenitentiaria has given here, *Liguori* wrote : "Puta, an fuerint obedientes viris in omnibus ?" (Praxis Confessarii ad bene excipiendas confessiones, ad instructionem Tyronum Confessariorum, Auctore S. Alph. Maria de Liguori, Parisiis-Lipsiae).

aliis taceat, nisi interrogatus fuerit. Necnon alios probatos auctores consulere non omittat.

Datum Romae a S. Poenitentiaria die 8. junii 1842.

VI. *Noldin*, "De sexto praecepto et de usu matrimonii," p. 85—86.

76. Quoad modum tractandi onanismo delitos ex compluribus responsis s. sedis [18] haec notanda sunt :

(*a*) Confessarius *tenetur* prudenter et discrete interrogare poenitentes, quando adest fundata suspicio eos de onanismo, cui addicti sunt, omnino solere. Interrogare autem potest inquirendo, num aliquid sit, quod circa matrimonii sanctitatem, prolis generationem conscientiam remordeat. Quod si poenitens neget plerumque ab ulteriore interrogatione abstinere potest.

In illis regionibus, in quibus onanismi vitium late grassatur, confessarius fere semper rationabiliter supponere potest, poenitentem illud peccatum consulto tacere. Abstineat tamen a specialibus interrogationibus : an semen extra vas effuderint ; an generationem se retrahendo impedierint etc.

VII. Extracts from "The Morality of Birth Control" by "*A Priest of the Church of England.*" The Sin of Onan, pp. 56–58, 68–69, 70–71, 218–219 and 220.

"To understand very thoroughly what we are about to discuss, we must first read Deuteronomy xxv. verses 5 to 10 inclusive, in the Revised Version. These verses record for us the Levirate Law, and are as follow :—

> " ' If brethren dwell together and one of them die and leave no son, the wife of the dead shall not marry without unto a stranger ; her husband's brother shall go in unto her and take her to him to wife, and perform the duty of an husband's brother unto her. And it shall be that the first-born which she beareth shall succeed in the name of his brother which is dead, that his name be not blotted out of Israel. And if the man like not to take his brother's wife, then his brother's wife shall go up to the gate unto the elders and say : My husband's brother refuseth to raise up unto his brother' a name in Israel ; he will not perform the duty of an husband's brother unto me.'

"In the same way, Onan's sin is recorded in Genesis xxxviii. verses 6 to 11 inclusive, which are as follow :—

" ' And Judah took a wife for Er his first-born and her name was Thamar. And Er, Judah's first-born, was wicked in the sight of the Lord, and the Lord slew him.

" ' And Judah said unto Onan : Go in unto thy brother's wife and perform the duty of an husband's brother unto her, and raise up seed to thy brother.

" ' And Onan knew that the seed should not be his ; and it came to pass, when he went in unto his brother's wife, that he spilled it on the ground, lest he should give seed to his brother. And the thing he did was evil in the sight of the Lord ; and He slew him also.' "

" Some possibilities are :

" (1) That Onan's sin was his refusal *per se* ' to raise up seed unto his brother,' *i.e.*, after outwardly accepting the obligation to do so.

" (2) That the sin was (1) his refusal plus the method used to evade his obligation, *i.e.*, his deceit and that the method itself contracted the malice of (1) his refusal, but except for (1) his refusal, the method, *per se*, would not have been sinful.

" (3) That the method, *per se*, *i.e.*, ' coitus ' plus withdrawal, was sinful.

" (4) That not (3) the method, *per se*, but the accompanying pollution, *per se*, was sinful.

" (5) That contraception, *per se*, was sinful (*i.e.*, irrespective of possibility (1), *supra*) or the particular method employed.

" (6) That contraception (*i.e.*, irrespective of possibility (1) *supra*) plus the particular method employed was sinful, but except for (5) the method, *per se*, would not have been sinful.

" Does not reason rebel, and say that he would have done ' evil in the sight of God ' and that his otherwise sinless action would have been evil because of the first possibility, *i.e.*, his refusal ' to raise up seed unto his brother ' ? If this is admitted, it disposes of possibilities (2), (3) and (4). Are we not therefore driven by reason to the first possibility, and to say that Onan's sin, *per se*, was ' his refusal to raise up seed unto his brother ' while accepting outwardly the obligation which custom thus imposed upon him, *i.e.*, whatever the method used, and therefore quite independent of the particular one chosen by Onan ? "

We shall find this conclusion confirmed in the next chapter. *Even the method of the intermenstrual period, if purposely and successfully used by him, would not have diminished Onan's guilt.*

Let us now examine the text closely for the motive ; it is soon laid bare : (*a*) " Raise up seed unto thy brother " ; *and Onan knew that the seed should not be his.*

(*b*) " *He spilled* it on the ground *lest he should give seed unto his brother.*"

The intention is clear, *i.e.*, refusal to fulfil the Levirate Law, after undertaking the obligation to do so.

It is probable that the practice of *coitus interruptus* was known from the earliest times and known to Onan before the instance of it recorded between himself and Thamar; but, as we shall see before long that his plan to circumvent the purpose of the Levirate Law, if acquiesced in by Thamar, might possibly be the equivalent of placing her in the position of an adulteress or harlot, with the possibility of the death penalty ever before her, should her consent to a deceitful evasion of the law in this manner be discovered, the purpose of the duty and privilege of a brother-in-law was frustrated in this particular way, viz., by " coitus interruptus."

In Jewish eyes, this sin is grossly aggravated and all the more terrible in Onan's case, because:

(1) It was a refusal to obey the law deliberately and intentionally though not a legal and open refusal, legally carried out, *i.e.*, it was an attempt to evade the law, to escape the punishment which would follow an open refusal to fulfil it.

(2) It was accomplished by an act of hypocrisy and deceit.

(3) Like Esau before him, he despised and coveted the great privilege of birthright, for though he did not sell his own, he cheated his dead brother's unborn child out of his. The inheritance of his dead brother would now come in time to his own firstborn son.

He not only robbed his dead brother of all that a Jew held dear, but by deliberately blotting his name out of Israel, he was also guilty of the crime of exterminating his brother's house in Israel.

This means that, because the early Jews believed that immortality consisted in living in his descendants, Onan's sin became also the equivalent of Cain's, *i.e.*, he became his brother's murderer or would-be murderer.

VIII. Extract from the speech by Professor *Kirstein* on: " The Problems of Marriage at the Present Time, and the Evangelical Code of Morals," (on p. 22 of the Congressional Reports of the 41st Congress of Home Missions; Publisher, Wichern Verlag, Berlin–Dahlem, 1925):

" It is out of the question to advise married people in the particular difficulties to which I have referred (in the narrower sense, and as already defined) to make use of preventives. For their decision to avoid further offspring was a matter of such genuine conscientious objection and so cogently supported by facts that, it deserves the fullest consideration from the moral expert whom they consult. For, either their decision is just and righteous, in which case the only effective method of prevention,

namely *continence*, is indicated : or their decision is not just and righteous, in which case their duty is neither prevention nor continence—but parenthood.

" The Rev. *Weymann* of Steglitz has written three essays, which have appeared in the official journal of our Central Executive Committee. In the last essay of this series, Pastor *Weymann* reproached our Evangelical Church with failure to guide and help her children in sexual matters. Now he declares prevention of conception justifiable in certain circumstances. I, for my part, cannot agree with him. I would ask my friend whether we may not justly and lawfully demand from the married, and for a season, that which we expect as a matter of course from those who are single, widowed or divorced, namely Continence. Pastor *Weymann* demands that the Evangelical Church should help the numerous persons who are sorely tried and tempted. I doubt their numbers ! and I base this doubt upon the cases brought to me, as to a shepherd of souls : cases which I am always particularly careful to probe and test, when they deal with sexual matters. I need not and will not go into detail on the subject, but I must add that I lay great stress on the understanding of concurrent psychic and emotional states, and of possible conflicts, marital or otherwise. The matters with which we are now concerned, are what I have to deal with in my daily duties. But I have met *no one* who was tried and tempted in the sense maintained by our friend ! Of course, there must be such persons and such difficulties, otherwise Rev. *Weymann* would not have mentioned them : but I think they are in the minority ; yes, a small minority. And for the sake of those few persons, are we to demand that the Church should permit preventive methods, within certain limits ? I think I have advanced sufficient reasons why we should not do so."

IX. Extracts from the address by Rev. *Haug*. (Congress and occasion as above, pp. 64–65 of Official Report.)

" I will say nothing about abortion, as I agree with the speaker, in essentials, on that subject ; but a word on the problem of prevention of conception. I am grateful to Rev. *Weymann* for having revealed prevalent conditions in all their horror, and also for having so honestly and frankly voiced his opinions, for honesty and frankness are the first requisites for a change of heart here. Hundreds of thousands of our contemporaries, including professing Christians, think and act on these lines, but keep silence, and pretend in public that they abstain——.

" Our two essays show clearly how far we are in agreement. But on a matter of principle, I entirely dissent. Pastor *Weymann* holds that permanent abstinence in married life is neither possible for normal individuals, nor normally the ideal course of

conduct. He considers contraceptives justifiable accessories in every marriage. I cannot go so far. I must distinguish between Christian ideals and practical exigencies. Our friend's argument is essentially an attack on the ideal of Christianity in marriage ; it gives undue weight to physical nature. Of course, the body has its rights ; joy in bodily intimacy, in bodily function, is a gift of God ; if we deny such joy, we revert to pre-Christian asceticism ! But it is admitting the priority and pre-eminence of the body over the soul to say that human beings, even Christians, cannot tame the urge of nature in the married state, nor can they abstain without suffering harm ; that harmony and happiness in marriage are ruined by continence, and that marriage is frozen and crippled thereby. Nay, it is denying the power of Christ's grace, and failing to recognize the deep happiness of a purely spiritual bond, won through hard struggles, by His aid.

" It appears to me that marital intercourse between Christian couples in accordance with Christian ideals, must be on the following lines. They may gladly and lawfully be joined together, for mutual happiness and the creation of new lives. Both purposes are privileges and duties enjoined by God. They must be prepared to rear a goodly number of children, trusting in His word. In such times as they wish no further offspring, whether from motives of health, in the interests of both mother and children already born, or from motives of financial obligation—they can either have intercourse on the days when conception is unlikely, or they should abstain—the latter especially, when the wife conceives with ease and rapidity. This seems to me the Christian ideal I would wish to follow in my own life. We must lead men to follow this ideal ; we must recruit for it. But this can be done only if and when we make *real* converts, and *real* Christians.

" But we cannot fully meet crude realities by stressing ideals. We are not only called to preach repentance, and proclaim His message ; we must also be shepherds of souls. We have not only to deal with the Faithful, but with that larger circle whose allegiance is partly to the things of this world. And, as such shepherds, we must take heed, not only of eternity but of the immediate present. The Problem of Marriage, the difficulty of married life exists around us, and it is not entirely a manifestation of the sceptical and material outlook of our times. I say *not* entirely—though this outlook is certainly not without influence. And we must say No ! with all emphasis, where the motives are apathy, dependence on comfort or sheer desire for pleasure. But there are other real difficulties, as when one party to a marriage definitely does not want children, yet demands the physical response that is the natural basis of marriage. Generally it is the husband who expects the use of contraceptives by his

wife. Recently a wife, who is a true Christian, asked my opinion on the use of such methods. I said that Christians should be able to dispense with them. And she answered: 'That is quite true —but——'—and this *but* is the problem we must solve."

X. Views of English Christians and Churchmen on Contraception.

The best authority here is the admirable book by *J. F. Laun.*[19] It is well worth attentive study, as regards other problems as well; for instance, in the chapters comparing the English and German national characters, and the teachings of Luther and Calvin. *Laun* summarizes the chief conclusions of the Conference on Politics, Economics and Citizenship ("Copec") as follow:

"14. The prevention of conception has to-day become an inescapable necessity—however distasteful: and this both from economic and hygienic causes. Three different views were represented and voiced in the Commissions:

"(*a*) Reprobation of intercourse with contraception, as an unnatural, unæsthetic form of sensuality.

"(*b*) Disapproval in principle, while admitting the existence of cases in which prevention becomes an obvious duty.

"(*c*) Acceptance of contraception as not in any way intrinsically wrong, but as making possible fully desirable and responsible parenthood. Continuous excitation without gratification can lead to nervous disturbances; but contraception makes a serene normal fulfilment possible. Many sincere Christians exercise contraception deliberately and with no qualms of conscience in its use."

The main currents of opinion are therefore the same as in the German Churches, but the body of opinion marked (*c*) goes much further.*

XI. The Hebrew Faith and Contraception.

The stringent Rabbinical rules on marriage—which forbid any attempt at preventing procreation (whether actively or passively) —are habitually ignored by a large percentage of the Jews of Western Europe and America. Their Eastern European brethren keep to the very letter of the Law, and with the results that might be expected. Within a relatively short space of time, the number

* Since the original appeared in print we have seen the Lambeth Conference of 1930 admit that contraception may be necessary in some cases and justified in others, though this admission is grudgingly and haltingly expressed. See also, for an extreme statement of traditional view, the Papal Encyclical, "Casti Connubii," of January, 1931. (Tr.'s Note.)

of births from Jewish marriages in Germany has dropped almost by half, as *Theilhaber* [20] has pointed out. But in Galicia, Poland and the Ukraine, the number of Jewish births is still so great that the race continues undiminished by subsequent violence and disease. The Orthodox Hebrew Faith is much more pronounced and thorough in its reverence for physical life and genital function than the Christian religion. While, in certain circumstances, the Christian Churches permit or recommend abstinence between husband and wife—the orthodox Hebrew considers marital intercourse a duty, and abstention wrong.* The blessing of offspring means much to him, however poor and difficult his life may be. In certain directions Jews are more liable to psychic conflicts and difficulties than other people; but they are spared the peculiarly distressing, typically Christian "complexes" centring round reproduction. Either Jews are fully "Orthodox" and find it quite easy and obvious to lead their lives on traditional lines—like our Christian forefathers in pre-scientific days—and to trust that "the Lord will provide"; or they are sceptics; and either acknowledge their scepticism or publicly pretend to an orthodoxy they do not share, out of business expediency or family piety. In either case, they feel neither doubts nor scruples in this matter, and certainly do not perpetually "walk between a fear and a fear" as do so many Christians.

XII. Extract from *Wichern's* "Sexual Ethik und Bevölkerungspolitik." Arzt und Seelsorger, No. 10, p. 12.

In his famous treatise on Friendship, *Alexander von Gleichen-Russwurm*, a descendant of the poet Schiller, suggests that "today a doctor who possesses philosophical detachment and breadth of vision, with exact knowledge, who is just and sympathetic, who in a word, knows how to be a friend—has the most beneficial and the most noble office in all the blessed hierarchy of friendship. His power is terrible—and beautiful. It becomes lovelier and even more beautiful, as humanity realizes more clearly and completely the interaction of soul and body, and discards more thoroughly the superstition that either can be isolated and treated by itself." And we hear more and more frequently, expressions of the opinion that doctors and not priests are the shepherds of modern souls. In one great department of life this is undoubtedly the case; namely, in sexual matters. How inextricably is spirit involved here with flesh, and nerves and blood with imagination and purpose! And in no other department of life is there so much deception, evasion and illusion as in this! An

* Abstention that is, within the marriage bond and, I think also, although it is not explicitly stated—abstention from the marriage tie. (See *Weissenberg.* [21])

anecdote I heard recently is characteristic of our time. A sensitive, highly cultured woman was asked why most modern people reveal their sexual experiences and emotions to physicians, but never to clerics. She replied : " Do we not undress before our doctors ? so it becomes easier to reveal our hearts as well."

It is probably true that only doctors are in a position to gain a comprehensive view of the actualities of sex in human life to-day. So they have a specially urgent duty to bring light and help into that great darkness, and to work towards better and happier things.

CHAPTER II

FAMILY LIMITATION IN ITS NATIONAL, INTERNATIONAL AND RACIAL ASPECTS

My readers will hardly expect a complete discussion of Population Problems in a medical book, nor shall I attempt such discussion. From the practical and hygienic standpoints, they have been admirably treated by *Alfred Grotjahn*[22] in his well-known work, " The Hygiene of Human Reproduction ; an Attempt at Practical Eugenics," to which I refer inquirers. He concludes as follows :

" The ideal aim of human breeding may be formulated as a population proportionate to its resources of nature and culture, in which, with each generation, aptitudes and faculties increase and defects and morbidities diminish.

" There is a proverb : ' Where there's a will there's a way.' There is a way. The way is plain—but the will to take this path to a finer future is neither *general nor resolute.* May it become both ! and inspire, not only a small minority, but the great mass of the people, so that the slow-moving forces of legislation and administration, national and local, may place themselves at the service of a systematic hygiene of Human Reproduction."

In this chapter I shall endeavour to suggest the importance of individual reproduction for the community, of which the individual forms a part. Of course, all individuals, so far as they are capable of thought, or will permit themselves this often inconvenient activity, have some recognition of this importance. But almost everyone is egocentric in practice ; and, in sexual matters and their results in reproduction, mankind is more completely egotistic than in any other capacity. At the best, a certain " égoisme à deux " is achieved, a league of two against all ! or the primary egotism is extended to include direct progeny and descendants, but this is generally only in material property and possessions. Such married couples as arrange their sexual life on lines

which will best promote the physical, mental and ethical value of their potential children, are extremely few in comparison with those who care *nothing* for what they may bequeath to their children's minds and bodies. Nay—the super-conscientious and conscious are often found among those who *do not have* the children they long and plan for—perhaps who cannot have them ! Life's ironies are perhaps nowhere more bitter than in its psychological " causes and effects."

This instinctive human egotism inhibits any profound or exact thinking about reproduction. It is the most *myopic*, the most reckless of all egotisms. It does not think of the future, and if it does not think of its *own* later years, how much less does it consider the future of humanity in general, or its own people in particular—however patriotic on other occasions !

Human beings are sexually complete individualists. The medical adviser must accept this fact and help the *individual* patient to health and happiness in so far as others are not harmed thereby, as part of his professional privilege and duty. And his duty is not only to cure the sick, but to preserve the healthy—a principle of special application to sexual life in marriage, though too many doctors still refuse their obligation to give appropriate and expert advice thereon. Positive and negative results are influential, not only on the lives of individuals but also for human society. Here, too, the medical profession has a profound responsibility. We will therefore briefly summarize the moral obligation of parents not to harm the race from which they have sprung, or the State which represents their race. In my opinion, intelligent and conscientious control of reproduction by married couples (and in all its implications by the State) will be found to coincide almost entirely, and serve the interests of one and all.

If my readers have had the same experience as myself in my attempt to study the excellent literature on this subject

in all languages of Central and Western Europe, as well as certain equally admirable American monographs and articles —they will agree with me that it is difficult to judge to what conclusion this expert literature tends. There is a profusion of statistics on all aspects of population, but the different sets of statistics lead to diametrically opposite conclusions. We must agree that some definite attitude on these questions is necessary to any interpretation ! Here too, faith precedes knowledge.

For medical men, or for students of heredity, there can be no doubt whatever that *Quality* of posterity is the most important consideration. The need for *high and sustained quality* is basic.

But what of quantity ? Here there is no light to guide except the light of certain principles and preconceived ideas. Is over-population an instant danger ? Will humanity be forced to mutual slaughter as a remedy, if there is not a further and drastic restriction ? Or does the Earth offer us food and living room for many years to come ? Will the white race be supplanted by coloured races, if its increase is further limited ? Or will the black and brown and yellow races be forced to restrict their fertility ? Or will this result be effected by the primeval agencies of famine, epidemics and war ? Do the scientific knowledge and technical efficiency of Europe guarantee leadership, even if numbers fall much below their present scale relative to Asia and Africa ?

And the most immediately pressing problem—the inter-European, what of that ? Will not the " logic of events " force certain races and nationalities to break their carefully delimited frontiers and come into conflict with their neighbours ? Are not the national leaders of the neighbouring peoples morally obliged to stimulate the increase of their own nations, by all the means in their power, as a defensive counterstroke of self-preservation ? And does not this lawful self-defence further increase the will to war and the likelihood of war ? Or, are such wars not only unavoidable, but necessary in order to restore the balance between Earth's available area and the resources and numbers of mankind ?

For this balance has been greatly altered by the work of science in the prevention of disease. In order to restore any balanced proportion between the great increase of births and the diminished death rate, would it not be logically necessary for such wars to become more devastating and destructive than ever before ?

All of us know that these questions, these problems, exist ; they are difficult to cope with on the theoretical plane, and they are deeply disturbing emotionally. And they are still unsolved in fact. But, I would suggest that their answers are as follows :

Do we aim at avoiding the enormous destruction of human life which would (and *will*) result from the present disproportion between population and available space—between folk and land ? * Then, the adequate proportion must be *found and maintained* by deliberate measures. We refuse to do this by raising the death rate—for example, by means of the abolition of modern hygiene, sanitation and antiseptics. Very well, the only available alternative is the limitation of increase by contraception.

This is a clear and self-evident truth—almost a truism. There are, however, two necessary postscripts. There is the influence of religious traditions against contraception, and there is also the difficulty of successful individual adjustment. Moreover, we must not forget that any race using contraceptives, easily loses moderation and that *over*-population is rapidly replaced by a certain degree of depopulation ; there is disturbed balance on the other side of the scales. *We must admit, however, that no modern* State *has hitherto devised means of systematically limiting the number of its citizens.* The fall in the birth rate has been the result of individual action for individualist motives, though such individual action may, and has, become a widely diffused habit with certain nations. But the danger of racial unbalance and depopulation is not abrogated. Those who

* The writer has here in mind the special conditions of *Europe* rather than of the planet. But, of course, any nation may be led into war, by connection with or conditions in far-distant lands, caused by migration and colonization. A discussion of the importance of these factors would be out of place here, and is not essential to our argument.

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count certain local and racial symptoms of di[illegible]the form trivial, if not wholly welcome, as modifying the books population of Europe as a whole, hope that these con[illegible]lle," trends will cancel each other out, as new racial elemen[illegible]us from outside the depopulated area migrate and assimilate themselves to the older inhabitants. They refer, not only to the evidence of past history, but especially to the immensely significant case of the United States and, indeed, the North American Continent, where human plasticity and adaptability have amalgamated very numerous and various ethnical elements into a nation with its own racial types, its own mental outlook and many such excellent qualities that it has achieved both the highest material prosperity and an influence in the counsels of the world which we could very ill afford to lose. These facts are indisputable. *But*—— the conditions of migration within the Continent of Europe are very different from those which made it possible to found the United States of America. The European migrants into other European countries, whether distant or adjacent, find neither the American spaces and facilities for settlement, nor the enormous untouched natural resources which were tapped by the Colonial pioneers. Moreover, the migration is much less complete, less genuine, in European conditions to-day, where relatively small distances and modern traffic facilities, favour constant travel to and fro, and do not favour permanent change of residence and nationality. The merging and mixing of the new and the indigenous national elements is not promoted, neither is the mingling of different races among the migrants ; a new racial type is not formed, nor an old one perceptibly renewed. At the present time I have the interesting experience of living in a borderland in which different *Nations*, and one may almost say, different *Cultures*, meet, without mingling, but go their own ways. In this historical borderland, *emigration* has been a habit for centuries and *immigration* is now quite as conspicuous and varied. Yet, it is increasingly evident that there is no assimilation, nor permanent coalescence, and this leads to great doubt as to the possibility of a *new people forming itself, through the merging of new racial elements into the*

than any other race to absorb and assimilate the foreigners whom they attract as residents. This is probably true. Nevertheless, one need only keep one's eyes open for a few days, in the mining and manufacturing provinces of Northern France, in order to receive a very definite impression that even French powers of racial absorption and assimilation have a limit, and that this limit has been gravely exceeded in certain districts. Over one-seventh part of the 40 millions who inhabit France are foreigners, and the " Service de la Main d'œuvre étrangère " is able to record a weekly increase —and a permanent increase !—of 7,000 immigrants.

I will not depend on my own personal impressions however, but quote further passages from an article by *G. Le Fêvre* in *Le Journal* of 6th October, 1928, in Appendix IV. to this chapter.

It is not possible that such a constant and considerable influx of foreigners can fail to influence the national type of any country, especially as this influx will have to grow rather than dwindle in the immediate future.* I am not in a position to judge whether these ethnic changes are already perceptible in France, physically and socially, but I have been repeatedly and emphatically assured that such is, indeed, the case. Half a century ago this result was prophesied by *Rochard* †: " A people that must look to foreigners for its vital increase rapidly loses its character, habits and force. With time, it also loses its most precious and distinctive possession—its own individuality, its identity among the nations."

The special combinations of qualities and aptitudes characteristic of the various nations cannot be obliterated without the loss and destruction of profound values, both material and psychic. There is loss both to the State and nation concerned, to the citizens who compose it, and to the whole of humanity, of which the nations form various and essential parts—and loss on both the material and the

* See *Le Fêvre's* question at the end of his first article. The answer can only be in the affirmative.

† *Rochard* was General Inspector of Sanitary Services to the French Navy. He was quoted by *Lagneau* " De l'Immigration en France " (1884). See Appendix V.

mental planes. On the material plane, because the international whole is a texture interwoven closely in economics and industry and with constant interactions in production and consumption; and loss in the world of ideas, because each of the nations, to which these observations have reference, has a national culture and tradition which stimulate, fertilize and complete the cultures and traditions of its neighbours, and form an important element in the intellectual and ethical achievements of the whole human race.

The wholly individualistic point of view, which is instinctive regarding reproduction, must be replaced by the conviction that the continuance of the family, stock, race, nation and species, concerns—ALL.

"Must be replaced"? Easily said, indeed. Even if it were possible to persuade many modern men and women of this necessity—outward circumstances would still be too strong, and instinctive egotism, in the last resort, too deep. There is an Italian proverb: "Dal dire al fare c'è in mezzo il mare"—"There is a sea between the word and the deed."

There is, indeed, only one way of really promoting reproduction; that is, to make it so advantageous to have children that the inevitable drawbacks will be outweighed.

This is apart from the instinctive urge and from all emotional considerations. I do not underrate human emotion! But civilized individuals to-day are rationalists, materialists, realists on this point, and control and measure emotional satisfactions: "Shall I get enough pleasure and happiness to make the effort and sacrifice worth while?"

And we must admit that the emancipation of modern children and adolescents is not always encouraging to parental idealism; for instance, the exactions as to money and leisure and the repeated reproach that "After all, I didn't ask to be born, you know!"

If the community has an interest in the fulfilment of the urge to reproduction in marriage—and an interest in supporting such fulfilment, then the community must take measures to replace the discouragement and obstruction of

certain important factors, by direct encouragement and stimulation.

We will briefly outline how this can be done. First, let us consider what is desirable in certain cases.

An appreciable increase of population would be very fortunate for France. That country is the only one which is suffering from depopulation as a result of prolonged and drastic decrease of births. It is obvious that the French Government is concerned in bringing about an increase in births but, so far, with very little success.

Certain other countries have not a decreased number of births, but might find an increase advisable; from the international point of view no objection could be made to this increase, provided that the nations in question had space and food for this increase within their own borders or in their Colonies and Dependencies. If there are not sufficient space and food, then attempts to stimulate the growth of population, on the part of any nation with limited resources, are *not unobjectionable* from other nations' point of view, although, of course, these neighbours cannot actively interfere.

None of the countries with which we are at present concerned has an excess of population which could not be dealt with, either by regional and economic readjustments within their own borders, or by emigration. Therefore, at our present stage of European history there can be no need to reduce the population of any country and, moreover, the countries which particularly interest us—I refer to Great Britain, Germany and Holland—have, of recent years, brought down their increase to a limit beyond which it would be hardly safe or wise to reduce.

For most of the countries of Europe, and especially for those Nordic and Atlantic peoples cited above—the biological prescription is to keep their present numbers constant, and even, if possible, to arrange for a moderate addition thereto, as reserves in possible national emergencies. But the application of this prescription is very difficult, as the tendency to individual " Family Limitation " has become accentuated of recent years.

General statements will not carry us further. However great the distance between the enunciation and the realization of a desirable aim, it will be helpful to make that aim definite and precise.

How far must each successive human generation increase in order to guarantee the continuity of the population or human group to which such generations belong? How many children must be born to each marriage if the nations are not to dwindle? Many statisticians have turned their attention to this question. I quote the conclusions of *L. von Bortkiewicz* [24] which are both illuminating and intelligible:

"We assume that, out of every 1,000 persons born into the world, about 300 will die before they attain the age of reproduction, either as begetters or bearers of children. We therefore find that the number of children that each married couple should produce, *in order to increase* the population, is not merely 2 but $\frac{1{,}000 \times 2}{700}$, *i.e.*, 2·86. And it must be remembered that a certain number of sexually mature adults remain unmarried: let us say 8 per cent. Taking this into consideration, we find that the desirable minimum of offspring to a marriage is increased from 2·86 to 3·11.

"Another consideration meets us: this number of 3·11 children per marriage is based on the assumption that childless marriages are included in our calculations. If childless marriages are to continue at about the ratio of 10 per cent. of all marriages, the average minimum of children for fertile marriages will be raised to 3·46."

Other statistical calculations have led to similar conclusions. *

On this basis, as well as by independent study, *A. Grotjahn* came to demand a "minimum of three children"—a suggestion which he made as early as 1912,[25] in opposition to the two-child system which had many adherents, not so much in theory as in practice. Since that date the system of as few children as possible has become far more widely prevalent.

Grotjahn's views are as follows:

* See Appendix to this Chapter, No. VI.

" I. Every married pair have the duty of rearing a minimum number of (at least) three children, up to five years of age.

" II. Parents whose hereditary constitution makes it probable that their offspring will be slightly under the average in quality, have the same obligation ; but they should not have more than the minimum three children.

" III. Every physically vigorous married couple, or such married couples as possess valuable hereditary qualities and aptitudes, have a right to exceed the minimum and to receive material compensation for each extra child ; this compensation to be raised in taxation levied on celibates, childless persons and those married couples who have less than three children.

" Of these demands, the first is the chief, for it deals with the number necessary to preserve the bare quantity of an already stationary population. But if every fertile married couple aim at producing and *rearing* three children—not counting such infants and young children as die before they are five years old—and if a number of apt and vigorous couples can be persuaded to produce and rear more than this minimum of three, by means of economic grants and privileges, then at least the population will have enough live births to ensure its preservation and increase."

Grotjahn's chief maxim has been accepted and confirmed by most authorities on the subject. In my opinion, he avoids the disadvantages both of excessive and dwindling population and promotes the interests of the Community without making greater demands on its individual members than they can normally and reasonably meet.

If a State, as representative of a race or nation, assumed the right to demand *Grotjahn's* minimum, in the interests of its own preservation, we should find, most strangely and fortunately, that reasons of State were not necessarily incompatible with the interests of individuals.

In the previous chapter I have stated that I do not consider it an unreasonable or excessive demand on a woman's health if she produces three or four children. I may even add my agreement with most of the leading gynecologists, who consider this physiological achievement *in itself* beneficial to the mother. Three or four children are certainly not a disadvantageous number for the family's happiness ; on the contrary. The three or four children whom I could wish to see in each normal marriage, correspond

to the average of three children over five years of age whom *Grotjahn* considers due to the Nation. This number would meet the interests of Community and individuals alike, if only the Community would adjust economic circumstances in such a way that those who fulfil their parental duties did not suffer in comparison with those who cannot or will not perform such duties.

Both savants and States agree on the need for systematic encouragement of population, and they suggest methods or enact regulations to that end, but on too small a scale, for only the boldest and broadest measures can be effectual here. I would refer those interested to the works of *Harmsen* and *Grotjahn*, from which I have already quoted, and to the close-knit essay by *J. Kaup* [26] in the *Münchner Medizinischer Wochenschrift.**

I would suggest that, if the State demands a guarantee of population from its adult married citizens by the production and rearing of a definite number of children, it thereby exacts, not only physical and mental efforts, but pecuniary sacrifices as well. The State also normally demands direct monetary contributions in taxation (we omit indirect taxation and military service from the argument for greater clarity and simplification). It is both fair and feasible to "lump together" these contributions in money and in kind," *i.e.*, healthy children, and treat them as one, so that less than a certain number of children would automatically mean larger pecuniary contributions, and *vice versâ*.

Those National States that endeavour to take measures against the reduction of their populations have a much more urgent duty than any preferential legislation; and this is the *provision of adequate Housing*. The housing shortage is certainly an abnormal and *occasional, i.e.*, temporary affliction, but in the years since the World War it has been responsible for such terrible results—and is still so responsible—that, so long as these results continue, it is preposterous and monstrous to expect the couples who

* I omit reference to political pamphlets and articles on the subject, although many such contain valuable material.

suffer from them to produce children for whom they will not be able to find anything fit to call a home.*

France suffers quite as much as Germany from the Housing Shortage but, according to *Harmsen*,† has already done much to meet the need. Ample loans on easy terms to Building Societies with guarantees are, of course, a comparatively rapid form of tackling the problem. There is no doubt whatever that the first reply to those who advise married couples *in their own interest*, not to limit their families too stringently—is " What about House-room ? " Of course that is sometimes an excuse, a mere phrase, but it is oftener only too true that the difficulty of getting decent house-room lays a veto on further—or any !—parenthood.

And so long as the organized community is unable to change and amend the abnormal conditions for which the Community bears the responsibility—it has no right to demand even moderate and normal increase—as defined above—from its citizens.

Only if, and when, adequate housing accommodation is available (and for the new lives demanded as well as those already in being) will it be possible for Governments to set about operating a *positive policy on population.*

But here the State will never be able to apply direct measures of compulsion, as is done in many cases in regard to military service. Indirect pressure and indirect persuasion must be used. Among all possible methods which have been discussed or applied, the system whose main lines we have briefly indicated above is the most simple, direct and easily practicable.

This " concentrated " method of encouraging population has the advantage over the " diffused " methods in favour with the French Government—and also, in some circles in Germany—that the concentrated pressure can be applied to all classes of the community, and need not be restricted to

* *Cf.* Appendix VII. to this Chapter.
† *Cf.* Appendix VIII. to this Chapter.
‡ See quotation from Harmsen in the Appendix IX. to this Chapter. In the fifth section of his book, Harmsen summarizes the various measures, and discusses their efficacy.

All who desire to preserve not only the quantity, but also the quality of human lives, that is, all who rightly envisage social hygiene, *must* necessarily demand that *all* classes, professions and strata of the population, shall equally be enabled to contribute a due proportion of the next generation, without thereby "losing caste." For the qualitative preservation of a nation is just as important as its numerical preservation, and, for this purpose, there should be equal participation of all its classes and sections; this need has been hitherto neglected, and it is of urgency that it should now be recognized.

Grotjahn has irresistibly demonstrated the danger of degeneracy in modern nations, through the disproportionate decline of births in the governing and intellectual classes. Herewith we quote the beginning and conclusion of his argument, as well as a brief passage from its main body.

"Not only does a progressive decline of population challenge national and political dangers, but it is accompanied by others of essentially biological and genetic type, less patently obvious, but so profound and far reaching that they can hardly be overestimated; their effect may thus be summed up: alterations in the quantity of any population must lead to alterations of quality as well. Just as in the whole comity of nations, the varying trends of increase in population, affect the economic and political balance of power, according to their rise or fall—so, equally, differences in the quantitative production of the various classes and sections within each nation, bring changes which cannot but affect national quality as a whole. For instance, in certain classes, late marriages are customary, and this prolongs the duration of the late marrying generation. But even a slight decrease in the number of children born, and a slight increase in the duration of a generation—(*i.e.*, postponement of the age of marriage)—diminish the numbers of a class, more than is apparent to a casual observer. Thus *F. Lenz*,[27] takes two groups: one with three children per marriage, and marriage at 33 years; and the other with four children per marriage and marriage at 25. In a century, their respective ratios would be 17·5 to 82·5, and, in three hundred years, actually 0·9 to 99·1! *Thus, unequal quantitative reproduction, as between various groups, is of the greatest importance to the type and quality of the general population.* This process is inconspicuous and, for this reason, statistical science should take special note of it—which it has hitherto everywhere

failed to do. But even the small amount of relevant data available, make this dysgenic tendency—a tendency due to social and economic factors—unmistakably evident, as regards the leading peoples of modern civilization. With the regularity of a natural law, a numerous group of families are given every inducement to have fewer children than are required in order merely to keep up the numbers of the section, or profession, to which they belong " (pp. 111–112).

" The childlessness or small families of our higher bureaucrats and administrative officials are not only due to the fact that, as Civil Servants, they can only marry late, if at all. These are also symptoms of the class to which such administrators belong : the brain workers of special skill and technique, the intellectuals or intelligentzia. For our purposes, this class includes Clergy, Doctors, Engineers, Artists, Publicists, etc. If we study them eugenically, we find a very distinct and distressing phenomenon ; they are an Upper Class, an *Élite*, without anything like enough offspring to keep up their numbers. Rather are they compelled, continuously to select and incorporate into their ranks, gifted and vigorous individuals from other classes—*and then to sterlize them*, partially or entirely " (p. 116).*

" The numerical unbalance in reproduction is an accompaniment and a consequence of the formation, acceptance and preservation of castes, classes and grades of population. It would disappear, together with its dysgenic effects, if the constant automatic formation (and sterilization) of a highly specialized upper class could be ' levelled up to ' and finally abrogated, by the steady increase of social and economic justice. The author of these reflections has no doubt that we are approaching this economic and social readjustment, or rather that we have entered its first stages ; for the civic and legal equality of all citizens must tend towards juster economic conditions. From the standpoint of racial hygiene, such economic justice would be an immense benefit. But this phase of history is *only beginning*. Practical eugenics may hope for it, but must not count on it, in our day or generation. Practical eugenics deals with the present and the world as it is, and must therefore demand—quite independently of the already perceptible trend towards socialization—that so long as civilized nations are divided into classes and grades, these classes and grades must keep up their numbers by a biological increase which at least meets their losses by death, with a corresponding number of live births. Not only the special classes concerned, but the whole nation is affected. And it is not difficult to attain this equilibrium, if the ominous nature of the present position becomes generally known, and the small

* My italics. See Appendix X.

number of children necessary to maintain the *quantity* of our stock is definitely wanted and planned for" (p. 122).

Will this effort at eugenic education succeed? And, concurrently, will the rulers of the nations understand that they must not only make demands of their citizens, but also *make it possible to fulfil such demands?* In that case those individuals, who strive for achievement and advancement in the social sphere, will no longer need to choose deliberate sterility (or at least, limited and inadequate fertility) in order to keep the position they have won for themselves and their children.

The reader, who has followed this line of reasoning without preconceived political bias, will admit that national states act unwisely and unfairly, as custodians of the future of the races they represent, by confining the advantages and benefits of any repopulation policy they may pursue, exclusively or predominantly to the less educated, differentiated and conscious grades of their population, to the masses. *Obviously, this restriction must mean selection in inverse ratio to intellectual achievement,* and the positively step-motherly treatment of the professional classes is an appreciable influence against parenthood. There is an exceedingly good case for a different policy which would, up to a certain limit, systematically insure and protect parenthood among the intellectual and actively responsible types, while at the same time it made voluntary limitation of the family more accessible and practicable among the masses.

We must also bear in mind a second vital principle, that of *reproductive improvement and evolution,* which must be based on the development and all-round betterment of the individuals composing the mass of every nation.

We may summarize these vital principles as follows:

In order to improve the quality of any race or nation

(a) *The reproduction of such classes, grades or elements of the population as contain a high percentage of gifted and intellectually valuable individuals, should be, so far as possible, encouraged.*

(b) *Excessive reproduction of such classes and elements as furnish many individuals of less than average faculty and capacity should be discouraged;* and

(c) *The average quality of the latter classes should be improved.*

This qualitative improvement is precisely and directly attainable by the rational limitation of offspring in the latter sections of the community, (or among the masses) together with the operation of such legal and administrative measures as are included in the term "social betterment." The advocates of eugenics and racial hygiene may fully endorse "social betterment" legislation, if the legislators do not consider solely the interests of the less fortunate classes, but also take into consideration the quality and prosperity of the nation as a whole.

Moreover, the community must, as far as possible, encourage each of its individual citizens (and each of its married couples) to take care that their children shall be of as good quality (as eugenic, i.e., *well-born) as possible, and this not only in their own and their children's interest, but also in that of the nation of which they form a part.**

For these convergent purposes, comprehensive and varied measures will be needed. The most significant and beneficial of such measures are probably those which educate the public in the aims and means of racial improvement, by promoting or preventing conception, and those which directly combat venereal diseases.

Among the methods of attaining children of the best possible quality, both as individuals and as members of the Community, one of the most important is the mastery of appropriate contraceptive technique, which enables married couples to refrain from further parenthood, either permanently or for a time, as circumstances indicate.

Prolonged abstinence from sexual intercourse is empha-

* The State which makes racial improvement part of its moral code and deliberate policy, might also take appropriate measures completely to prevent parenthood on the part of those citizens whose biological contribution must necessarily be extremely dysgenic or injurious. This enormously important problem cannot be discussed here. Those interested may be referred to the exhaustive study by *Joseph Mayer*,(28) which contains a relevant bibliography.

tically *not* an appropriate contraceptive, as I have argued in detail in the preceding chapter. The State may lawfully ask its citizens either to limit or to increase their offspring, but it neither may nor can ask them for *limitation by abstention.* Wholesome and adequate mutual fulfilment of married couples is favourable to the Community, as I have pointed out in "The Erotic Aspect of Marriage,"[29] because it promotes achievement and efficiency in work, because it makes altruism more active and tender, and because it provides that indefinable moral atmosphere in which children thrive and are happy.

Thus we accept the inclusion of individual and social hygiene among the activities of modern citizens and the modern State. But it is, in every respect, both unjust and inexpedient for the State to exclude such important accessories to social and racial hygiene as contraceptives.

Even States, Governments and Legislatures should be consistent! And there would be far less underhand and injurious traffic in this department, if States would undertake a positive policy and not be content with shortsighted prohibitions and penalties.

If the State wills an enlightened and consistent eugenic policy, it can easily cope with the excessive misuse of contraceptive appliances and methods—a misuse which cannot be detected or prevented under present conditions.

Summary of Argument

It is in the interests of the State, as representative of the National Community, to:

(*a*) Keep up the numbers of its population;

(*b*) Raise and improve the quality of its population.

The first, or *quantitative,* aim will be attained if each married couple who are not permanently sterile produces and rears three or four children; a number which is also consonant with the welfare of the individuals concerned.

But no State has the right to ask or expect this from its married citizens unless and until it has helped to cure the ***Housing Shortage.***

As soon as there is adequate housing provision for families of two adults and three or four children, the State can proceed to graded taxation or rebates of taxation, *i.e.*, to additional taxes on potentially fertile but childless couples, and remitted taxes on healthy couples with three or four living children.

In order to achieve the second or qualitative aim, the perpetuation of the more responsible and intelligent sections of the nation must be encouraged, the *excessive* multiplication of the other elements must be *discouraged* and the average quality of the latter must be *raised.*

Therefore, the system of graded taxation referred to above must not unduly prefer and favour the less responsible and intelligent elements. But so-called social legislation—educational and recreational facilities, sanitation, public health work, insurance, etc.—must be regarded as favourable to the quality of the race at large, and especially of the masses.

The State can promote eugenics and racial hygiene by collecting, assimilating and diffusing the knowledge of all the matters referred to in this connection.

As eugenics and racial hygiene require the *regulation of increase, i.e.*, births, and as this regulation cannot be exercised by abstaining from sexual intercourse within marriage—for such abstinence is harmful both to individuals and to the Community—it must *be a duty of the State* to support research into the methods of preventing pregnancy, and to co-operate in spreading the knowledge of such effective methods and in facilitating their use.

The State could proceed differently and more efficiently than is the case at present, in order to prevent the misuse of contraceptives, and the supply of inferior articles at inflated prices.

APPENDICES TO CHAPTER II

I. Extract from an article by *Labat*, entitled "La Dépopulation de la Gascogne," in the *Revue des Deux Mondes*, 1st July, 1911.

"The fact predominating over all others in Gascony is the small number of births. If the most fertile pieces of soil are sold

at low prices, and the less favourable sites are in danger of desertion and of becoming derelict, if a whole section of society, the rural middle class, is being ruined and condemned to disappear . . . if the good qualities of the large families who represent the vital force of any nation, are becoming rare, and signs of decay and pusillanimity are visible in all quarters—the small number of new lives is responsible for it all."

II. Extract from *Hans Harmsen's* " Bevölkerungsprobleme Frankreichs " (" Population Problems of France "), pp. 65–66.

" The gravest economic results of the fall of the birth rate are in operation in rural life and agriculture. Although one of the most fertile parts of Europe, France is no longer able to grow its own food supply. In the two decades between 1850 and 1870, France exported a considerable amount of grain; but, even before the year 1914 there was an annual import of about 2,300,000 cwt. (hundredweight) of grain from abroad. Between 1919 and 1923, this rose to an average of 15,600,000 cwt. and reached over 20,000,000 in 1924. This left a debit balance of over 1,500,000,000 francs (one milliard and five hundred millions), and *Caziot* is of the opinion that the necessary amount of grain imported from abroad will shortly reach 30,000,000 cwt., implying a cost of two and a half milliards (Fr. 2,500,000,000).[30] The cause of this phenomenal rise in the import of cereals is, fundamentally, the diminution of the grain-growing areas within France during the last fifty (50) years. These areas amounted to over 7,000,000 (seven million) hectares in 1890. In 1913, they had diminished to six and a half (6½) million hectares. In the year 1923, although French territory once more included the fertile agricultural districts of Alsace and Lorraine, the official reports,[31] registered a total area under cereal crops of 5,200,000 hectares; and the uncultivated area had grown since 1913 (by 3,793,450 hectares) to 4,749,420 in ten years! Even these statistics are probably too favourable. In agrarian circles it was thought that the area under effective cultivation did not exceed 4½ million hectares."

Pp. 68–69. " The most conspicuous economic result of the rural depopulation resulting from a falling birth rate, is the unprecedented fall in the price of land, especially in the South of France. We may offer some characteristic examples.* In Le Quercy (Le Lot), a small estate, whose leasehold value was assessed at Fr. 52,000 in 1869 in the Canton Lableuque, was sold in 1906 for Fr. 17,000; and another piece of land, valued at

* Similar examples are scattered throughout the French Press and in every report of public discussions on the agrarian situation. Most of those cited above are from a series of articles by *Caziot*, entitled " La valeur de la terre en France," and published in 1924 in the *Journée Industrielle.*

Fr. 56,000 in 1873, went in 1913 for Fr. 18,000. In Perigord, a fine property of about 233 hectares, situated in the Canton Villaublard, cost Fr. 327,000 in 1876, and it was almost given away for Fr. 113,500 in 1908. A similar case occurred in the Canton Domme (Sarladais), an estate costing Fr. 52,000 in 1861, and sold for Fr. 16,000 in 1912. A farm of considerable extent, close to the gates of Dijon, cost Fr. 186,000 in 1871, and only Fr. 80,600 in 1913 ; and to-day the price it would fetch would be even lower than in 1913. The greatest depression prevails in the Valley of the Garonne ; for instance, a farm of 93 hectares, on good alluvial soil, was bought in 1884 for Fr. 360,000, and in 1904 for only Fr. 105,000. A most desirable estate at Le Tarn, comprising 142 hectares, fell from Fr. 240,000 to Fr. 85,000. Or, take the case of a piece of property in the Canton Damazan (Dept. Lot et Garonne), situated wholly in the Valley of the Garonne, and in its most fertile and favourable portion, near Aiguillon. This property included a residence and seven further buildings, and was acquired in 1876 for Fr. 408,000. But, by 1905, it only cost Fr. 105,000 : thus representing a *depreciation* of about 70%. A similar estate in Bretagne would have brought in at least Fr. 500,000. In the same Canton, Damazan, a property of 19 hectares cost Fr. 63,000 in 1887, and was sold in 1910 for Fr. 23,150 : a depreciation of 63% within 25 years. In the Canton Seyches, another district of Lot et Garonne Dept., at 11 kilometres from Marmande, a property of 32 hectares was valued at Fr. 39,500 in 1865 and at Fr. 12,000 in 1907 : another depreciation, or *devalorization* of 70% in half a century ! We could continue at any length with similar instances of the extreme gravity of the agrarian crisis now devastating the South of France."

III. From *Le Journal* of 5th October, 1928. Article by *Georges Le Fêvre.*

" For some years now, we have been inoculating rural France with 60,000 foreign workmen annually. Ought we not to enquire how this serum works, and whether we should diminish or increase the dose ? Let us be quite clear that the initial doses have been very small ; how many of these strangers—whether they hail from Italy, Spain, Poland or Belgium—have remained permanently on French soil ? Hardly a quarter, namely, 15,000 ! At this rate, it will take a century of immigration to replace the million and a half Frenchmen we have lost !

" ' Well,' you will reply, ' That's quite simple ; bring along more and more foreigners.' No, the problem is more difficult than that ! It is enough to split one's brain ! And why ?

" France has 50,000,000 (fifty million) hectares of good fertile soil, on which the French peasant does not grow any more crops.

Are we to transplant Italians, Belgians, Poles and Czhecho-Slovaks to these fields and vineyards? Agreed—*if we can do it!* And, two conditions are requisite here: first our French owners and employers must be willing to accept foreign employees; and, secondly, the foreign employees must be willing to 'stay put,' otherwise all our efforts and expenses will be in vain.

"Many farmers and owners of landed property are willing to contract for this immigrant labour, but few of them understand how to handle or acclimatize the foreigners. The foreign workman who comes to our rural districts under contract generally stands it for a year. (Not even so long, sometimes.) Then he 'quits' and goes into the nearest town to look for industrial employment.

"If the Polish cattlemen, the Italian stablemen, or the Spanish vine tender become metamorphosed into 'Factory hands' in the course of two years, and the dairymaid becomes a waitress in a Café—they must be replaced by other cattlemen, stablemen, vine tenders, dairymaids. And the attempt to repopulate rural France in this manner is simply repeating the labours of the Danaïdes.

"The French farmers and agrarians must really understand that foreign collaboration cannot be summoned by telephone at the last minute! And the French Government must assimilate another unwelcome truth: many people must be called into our country in order that only the best may be chosen and kept.

"Yes, of course, I know the replies. The Farmer will ask: 'And who is to bear the costs of transport, the advances for the first year, and the maintenance of all the young children: mouths without hands?'

"And the administration: 'What about the expenses of repatriation? How can we provide a special police service for immigrants?'

"But I would say to the farmers: 'Your land is badly cultivated. To-morrow it will produce nothing and the day after—it will sell for nothing.'

"And, to the Government: 'Since 1914, four million hectares of French soil have lain fallow and 15,000,000 (fifteen million) cwt. of wheat less has been grown in France. And—people are hunting wild boar again in our waste lands.'

"And I would ask all Frenchmen—all: 'Must we organize the immigration of rural labour? Yes—or No?'"

IV. From *Le Journal* of 6th October, 1928. Further article by *Georges Le Fêvre.*

"'Where is that French miner you told me about?'

"That is what one must ask—through an interpreter, of

course, there are no 'natives' to understand one's mother-tongue!—in certain quarters of Bruay-en-Artois, to-day.

"Over 120,000 Polish workmen—with their families, a colony of 400,000 persons—have been 'taken over' *en masse* by the Departments Nord and Pas de Calais, in the last ten years. The Mine-owners and Industrial employers of Northern France have joined forces here. And the reasons for their success in transplantation have been far less the improvements in wages, in variety of leisure-time amusements and the eight-hours day—than, quite simply, the fact that they were able to *house* the immigrants! (A great advantage compared to conditions on the rural estates!) In the last decade, thousands of little houses have gone up, surrounded by vegetable gardens, each within its concrete wall. And in each little house, dwells a family or young married pair.

"Thirty thousand Polish families are raising a new generation on French soil. Repopulation is succeeding! But, this very conspicuous success in mine and factory brings new problems in its wake. The families mean children—yes; and children mean education and assimilation. Two sets of human interests and instincts, previously running harmoniously parallel, begin to collide. There are two 'natural' and defensible points of view! Poland may say to us: 'We have sent you these our people, to be made into metalworkers, coalhewers, ironsmelters or navvies, but not to be made French!'

"The problem of special schools is only one aspect of the difficulties developing from large scale immigration. But there are also the Polish Churches, the Crèches, the 'Sokols,' the Sports Clubs and Musical Clubs, the Religious Associations, Confraternities, and so forth.

"If a single mining concern, like the Courrières Company, employs 9,000 Poles in a total number of 24,000 employees—and those 9,000 Polish men's families bring this immigrant population up to 30,000!—then the employers must make some social and recreative provision for the immigrants. And they do contribute handsomely to the finances of all the Associations which continue Polish traditions on French soil—each with its own flags and its own President. The Sokols arrange for Polish plays to be acted by amateurs, every Sunday at Marles or Ostricourt; the priests preach to their flocks in Polish and, on the 3rd July, the Polish National Feast is celebrated at Bruay-en-Artois, as though on the banks of the Vistula."

V. Extract from *Gustave Lagneau's* "De l'Immigration en France." Report to the Académie des Services Morales et Politiques (Institut de France.) By *M. Ch. Vergé*, Paris, 1884, p. 5.

On a recent occasion, in the Academy of Medicine, the General Inspector of Sanitation and Hygiene in the French Navy, *J. Rochard*, expressed himself as follows [32]:

> " 'If the actual numbers of our population have not diminished, or even shown a slight increase, this must be ascribed wholly to the immigration of foreign elements. The empty places in our ranks are being filled by foreigners, and this influx of mostly hostile elements threatens our future existence. A people that keeps up its numbers by foreign accretion, loses its character, distinctive habits and codes, and racial vitality; in time, it loses its most precious possession: its national identity and selfhood.' "

VI. Estimate of the number of children from each fertile marriage, which will suffice to keep the population stationary. (From an Essay by *K. Freudenberg*, " Die Notwendige Kinderzahl " (" The Necessary Number of Children "), *Deutsche Medizmische Wochenschrift*, 1924, No. 31, quoted in *Harmsen's* book.)

" In framing this estimate, we must assume that about 25% of all young women will not marry, or else marry too late in life, or lose their husbands too early, to provide the normal number of offspring. One out of every nine marriages must also be considered permanently sterile. But it is impossible to furnish any precise estimates of the infantile and juvenile mortality, which slays from birth till puberty or rather adolescence. To some degree this is directly connected with the number of children in a family; the larger the family, the higher the percentage of deaths among the children. On the other hand, however, the fall of the infantile and juvenile death rate is, to some extent, due to the progress of hygiene and medicine, and would persist even apart from the falling birth rate. Basing his researches on those of *V. Hamburger* [33] (from 1909–1913) Freudenberg concludes that four living and surviving children are desirable in every marriage that is not sterile. He leaves illegitimate births out of consideration, as they do not represent a desirable form of increase, since they are attended by a very high death rate.

" As Grotjahn remarked " (pp. 131-132 *op. cit.*), " such estimates can only be based on 'a movement of population of a normal character.' And Freudenberg shows how far from normal our present population statistics are. All who are interested in these matters, or wish to form relevant opinions, should study his words. He says: 'The present favourable death rate of 14‰ (per thousand) cannot continue, if the present birth rate continues at 22·8‰ (per thousand). The low death rate of to-day is based on the shifting sands of the present, *quite abnormal age distribution throughout the population.* For a certain

period in the recent past, which may be roughly reckoned as from 1872–1905, there were a large number of births and a moderate and steadily decreasing infant mortality. The result at the present day is that the generation of men and women between 18 and 50 years of age is much more numerous than that of the persons over 50. At the other end of life, owing to the very small number of births since 1916, there are relatively *few* babies and young children. We have few persons past the climacteric and very few young children; thus the age groups with a naturally high death rate are poorly represented and the most vital groups are well represented. A deceptive efflorescence, bearing the seed of its own death and decay! In another 30 years, if the present low birth rate continues, the majority of the German population will have passed into the age group from 50 to 80!

"The mortality coefficient of this group ranges between 20 and 250°/₀₀ (per thousand), with an average of about 100 (one in ten). Even if our mortality does not change unfavourably, we must then reckon with a general death rate for the whole nation of not less than 50°/₀₀. But the gross birth rate of 22·8% appears just adequate to cover the estimated death rate (which was 20·5% for the years 1910–1911). And, if the number of births is reckoned, not per head of the population, but—as is reasonable—per head of those persons who are of reproductive age, whether as begetters or bearers of children, we shall find that they have expressed their racial instinct to survive, by a relatively small number of offspring. If this number of new lives does not increase, while the adult generation becomes aged, and loses the faculty of reproduction, both the actual number of the population and the relative number must obviously fall heavily.

"According to the Census of 1919, the number of women in Germany between 15 and 45 years of age is about 16,000,000. The general fertility rate is therefore about 86°/₀₀. But, with 675,000 female live births per annum, the number of women of reproductive age will be only 14,500,000 in 30 years' time, even if we assume the continuance of the low death rate of 1910–1911. With 14,500,000 potential mothers, a fertility of 86°/₀₀ would only give a yearly number of 1,147,000 births, which would be wholly inadequate to cover the losses of the heavy death rate in the shifted age distribution."

These calculations should be attentively studied by anyone who tries to meet the warnings of the serious racial and eugenic prospects before Western Civilization, with cheerful references to the excess of births over deaths at the present time.

VII. From a Supplement to the Resolutions of the German Group at the General Conference of Christian Churches in Stockholm, 1925 (on "Practical Christianity"), pp. 27–28.

" There is a question of equal importance to ' our daily bread ' ; nay, even more important for the civic status and emotional health of the family. That is the *Housing Problem*, which was already a burning one in pre-war days and is now a gigantic evil, which cannot be adequately dealt with in this connection, but which it is quite impossible to ignore, for the recovery and cleansing of our family life are impossible until the housing shortage has been met.

" Before the War, about 300,000 (three hundred thousand) new homes were necessary every year to meet the growth of our waxing population. But the supply never equalled the most urgent demand, and the results were deeply deplorable. For instance, in 1900, Berlin had 7,792 dwellings with only one room provided with heating apparatus, and six or more inmates. In Breslau, there were 7,000 similar dwellings ; in Königsberg 5,300 ; in Barmen 4,300 ; in Hanover 3,200. These discreditable statistics have not been appreciably reduced : the obstacles raised by the War to the provision of working-class houses have proved, so far, insuperable. In 1912, 37 towns provided 8,912 buildings with 61,395 separate dwelling quarters ! In 1917, only 428, with 1,712 dwelling quarters ; in many places not a single new dwelling was built ! Yet the number of human families, of *households*, has increased by 922,305. At the end of 1920 the number of unfulfilled requests—or petitions—for dwellings was, in Königsberg 16,500 ; in Breslau 21,000 ; in Hamburg, 15,400 ; in Hanover 9,800 ; and in Mannheim 8,300. In Dresden, some households had to swallow their meals in two shifts, as there was not standing room for all at the table together. And we have heard of cases where there were *three* shifts, and not for food, but for sleep ! . . . Finally, just a few housing statistics. On New Year's Day, 1922, there were 147,000 registered applicants for dwellings in Berlin ; a year later there were 206,000 ; and in 1924, 223,000 ! *And*—34,000 *available dwellings !* "

(Extract from the address by *D. Titius* on " Evangelical Marriage and Family Life, and what it Means To-day.")

VIII. Administrative and Legislative Concessions of the French Government in respect of Housing. (*Harmsen, op. cit.* pp. 86–88.)

" The French housing shortage is particularly acute in the few large towns, just as is the case in Germany. Large numbers of children are almost a disqualification to applicants, and so these must be pent up in unwholesome and tiny quarters, where they wilt in body and deteriorate in mind and character. France has set an example by inaugurating a law which gives large families the first choice of cheap and good homes.

" Legislation ensures the preservation and upkeep of the home

in case the breadwinner dies and, if necessary, extends the lease. It has also extended the list of goods and possessions which may not be taken as surety for payment from large families. The financial burdens of such owners of house property as are prepared to let or give dwellings to large families on particularly favourable terms—have been eased, by virtual exemption from the tax on ground rent, as well as on door and window room.

" The final and most useful provisions are grants in aid and loans. These loans are advanced up to a considerable amount, and on easy terms, to the Building Societies and Estate Development Syndicates, which make a business of putting up new dwellings for large families. For example, a society of this type with a capital of Frs. 100,000 (*of which only Frs.* 25,000 *need to be subscribed*) may obtain a loan of Frs. 575,000 at 2% on this basis. These grants, which have been provided in the Budget, have been much in request, and have already somewhat ameliorated the housing conditions of large families."

IX. Characteristics of the French Racial Policy. (*Harmsen*, pp. 101–102.)

" It is mentally and psychologically typical of the French that they apply this new principle of special privileges for large families to almost every fresh piece of legislation; whereas Anglo-Saxons are slow to make a move in this direction and, when they do so, prefer a single comprehensive measure, avoiding bureaucratic methods so far as possible. The French Ministry of Health and the Group of French Parliamentarians specially interested in ' Repopulation,' regard this variety and multiplicity of incentive as most effective in the interests of the child and the nation. They are proud of their wealth of legislative expedients and enactments."

X. On the Dysgenic Results of the Formation of Upper Classes, which then become virtually Sterile. *Grotjahn* (*op. cit.*, p. 119).

" The formation of specialized and privileged governing classes may, however, have also an *indirect* dysgenic influence. Not only do the stocks of which such classes are composed tend towards small families, but they habitually fill the gaps in their ranks by *specially gifted and vigorous individuals*, who have risen from the lower strata of society. As such acceptance and assimilation by the ruling class is much desired, there is extreme competition in which persons of exceptional endowment will probably gain the prize. This process certainly increases the efficiency of the ruling class, but is highly detrimental and dysgenic for the race as a whole, especially when this process—which may be defined as super-classing in contrast to de-classing—is so intensified and so widespread as in Western Civilization to-day.

There is an incessant ascent of picked individuals, of exceptional intelligence, specialized ability, force of will and physical vigour, to higher grades of the social hierarchy; and this social ascent coincides with their total or partial sterility. And very often such social ascent and success have only been possible because their parents have limited the total number of their children, in order to give these exceptional individuals a better education and opportunities which have helped them to rise."

XI. Increase of the Valuable Elements of any Nation.

Francis Galton, the famous anthropologist, who was born in 1822, emphasized the need of using all reasonable means to induce the valuable and intellectually active sections of the community to contribute larger numbers of the next generation.

Galton first enunciated his theory in 1865. He put forward the proposition that the multiplication of the less fit elements should be discouraged and that of the more desirable should be furthered. He stated this theory in his book entitled " Inquiries into Human Faculty and its Development," and minted the term " eugenic," *i.e.*, well born.

Galton referred again, later, to the significance of the unequal reproductive rate of the different classes. Some of his comments are quoted in *Grotjahn's* book on p. 117. *Galton* feared that the English nation was no longer producing intellectual ability at the same rate as fifty or sixty years previously. The more distinguished and gifted individuals were not reproducing at the same rate, *or* relatively to the whole, and the less competent and vigorous were more fertile than their superiors. On another occasion *Galton* suggested that if a remedy were possible for this state of things it could only be by a reversal of these relative rates of fertility.

I would point out that it is not without significance in the history of this recent branch of human knowledge (which was vaguely adumbrated by Plato and others) that one of its two German co-founders, *Alfred Ploetz*, called it " Racial Hygiene." " In this connection, *racial* does not refer to the ethnological racial divisions (such as the Mediterranean, Dinaric, Nordic, etc.), but to the great stream of life that is kept flowing on, in and by each successive generation; the human entities which *Ploetz* termed the *biological* races, as distinct from the *ethnological*. The latter, or ethnological races, are biologically important insofar as they are the bearers of special hereditary qualities or tendencies, which may be more or less valuable biologically. According to *Ploetz*, racial hygiene is the study of the conditions of the optimum (best possible) preservation and evolution of the race. The inclusion of the *optimum* concept shows that *Ploetz*

finally took a wider view than might have been inferred from his initial studies of degeneration.

" Racial hygiene may even be considered more comprehensive than Galtonian Eugenics."

The above quotation is from an article on " Racial Hygiene," by *Agnes Bluhm*,[84] in *Marcuse's* " Encyclopædia of Sexual Science " (" Handwörterbuch der Sexualwissenschaft "). She defines racial hygiene as " the theory and practice of good human heredity, racial regeneration and desirable evolution (*Nordenholz*), or the study of being *well born*, the perfectibility of the species (*Driemann*)."

Agnes Bluhm's article gives some idea of what has been done in a comparatively short period of eugenic enquiry. But only the numerous special periodicals and reports of conferences and congresses in the Old World and the New can suggest the incredible amount of current research and collation on these lines. To give only one instance, *Ploetz*, who founded the Archives of Racial Biology, has been for some time investigating the effect of alcohol on the germ plasm by means of test experiments on rabbits. His experiments have been aided by a staff of eight assistants, but he does not consider that the results are as yet numerous or decisive enough to warrant publication, though he has treated and observed tens of thousands of rabbits! *

* Report in *Nederlandsche Tijdschrift for Geneeskunde* (Dutch Medical Journal) of 1928 (Vol. II., No. 41), by *M. A. van Herwerden*, of the Congress of the International Federation of Eugenic Organizations, in Munich, September, 1928.

CHAPTER III

THE INDIVIDUAL ASPECT OF FERTILITY AND STERILITY IN MARRIAGE

IN the introduction to this trilogy I termed the regulation of progeny in a manner satisfactory to both parents, the third of the four corner-stones of the Temple of Love and Happiness in Marriage.

Does this mean that such happiness depends on the existence of children ? No.

I can only repeat my earlier conviction that any marriage which seeks its *raison d'être* and justification not in itself but in its offspring, bears the seed of its own destruction,* and add that the fourth corner-stone—of vigorous and harmonious sexual activity—must first be strong and steadfast before one can rely on the third.†

The happiness of married life in itself is generally affected in a negative manner by progeny ; it can be severely strained if children are desired and do not appear. But children have a positive significance for the individual happiness of husband and wife, as separate persons, although their significance is unequal as between man and woman.

For the woman, motherhood means primarily the fulfilment of an urge for which she is constructed and adapted mentally and physically ; it gives the opportunity of expressing and developing her most important qualities and potentialities.‡

Hugo Sellheim [35] expresses this characteristically: "Every woman is an implicite mother and only a mother is an implicite woman."

It is often extraordinarily difficult for an unmarried woman

* See Vol. II.
† *Cf.* the psychoanalytical observations in Appendix I. to this Chapter.
‡ See Vol. II. *passim.*

to sublimate her maternal instincts or to suppress them. There are many severely neurotic results of this suppression or of substitute gratification. In the case of married women these results are often more pronounced and serious.

It appears that married women *who desire children* but fail to have them may be divided into two groups.

The first group is happier than those unmarried women who long especially for motherhood, and become more easily reconciled to their deprivation in the belief that they could at least have become pregnant. The women of this type have a certain equable sweetness and a rational resignation. They bow to the inevitable, and concentrate their maternal instinct on their husbands, endeavouring to make up for the non-existent children by a double share of tenderness and happiness. This task is well within the powers of the Pyknic Syntonic women, whose sexual life is free from complications and contradictions, but normal and spontaneous. Their mental balance does not suffer in this respect, nor does the happiness of their intimate married intercourse. Such women may be very happy though childless—if the husband fulfils his duty as a co-builder of married happiness. But, of course, he sometimes fails in this duty of help and comfort—even if the sterility of their union is not due to his fault (a subject we must refer to later). Thus the husband sometimes neglects his wife, through too great absorption in his work ; or sometimes his sexual egotism fails to appreciate or satisfy her erotic needs, or, finally (but frequently), he sometimes refuses to accept the fact that his desire for children in marriage is unattainable. The psychic health of such couples is put to a severe test, and one can no longer speak of *happiness* in such cases ; in fact, the wife—however favourable her initial temperament and constitution may have been—is only too often forced into the second category of unwillingly sterile wives.

This second group contains a great diversity and complexity of individual cases, but they have this in common : that they cannot resign themselves to the fact that they are childless. And when this unfulfilled yearning is met by a similar definite longing for children on the husband's part, the result

is far from seldom a sort of mutual obsession, a consciousness of frustration which binds the unhappy pair more closely to one another, but robs them of all joy in life, all extraneous interests. The strongest intellectual sympathies, which would otherwise have given both exquisite pleasure, can no longer enthral their minds, which are directed to one subject and one aim: the most perfect erotic harmony can no longer refresh and strengthen their spirits, for their intimate communion has ceased to be the manifestation of their unity and become the means to an end—the child. And in such cases of acute feminine maternal frustration, where the husband takes the matter easily and indifferently, the lives of both are thoroughly embittered, for it is well-nigh impossible for the wife to overcome her grief and, generally, equally impossible for her to avoid making it a perpetual irritation and reproach to her husband.

In the man it can hardly be said that there is a fundamental urge towards fatherhood. But this does not mean that the conscious wish for children cannot become clamant in men, whether with erotic or mystic colouring.

Erotically, as the desire for a permanent memento of moments of ecstasy, and, mystically, as the desire for individual continuance and survival in another personality.* The latter aspect has been socially formulated in the wish for " heirs " to name, possessions and position, and may be regarded as a manifestation of the urge to preserve life and *go on living*, which is the primary impulse of all animate things.

There may be also a wish for reassurance and confirmation of virility. For in marriages which are unintentionally childless, the husband often develops inferiority complexes.

And there is a further motive—which is generally quite below the threshold of consciousness, but none the less effective for that. The man's emotional attitude towards his own mother may lead him to desire to meet and honour the Great Mother in the person of his wife

* *Cf. Rupert Brooke's* lines: " Their sons they gave . . . their immortality."—(Tr.'s Note.)

The profound interactions between sexuality and adoration of maternity, which have been expressed in so many religious cults and so many symbolic dreams—for instance, in the wish-dream of a return into the mother's womb—have certainly some influence here.

There are further subconscious motives towards the begetting and rearing of children in those psychic processes which become conscious in the form of *principles*, such as those enunciated by *Albert Schweitzer* as " Reverence for life and for the will to live " and " The Ethic of Devotion." [86] This reverence for life, itself and for the urge to live, recurs continually in human beings, however destructive many of their inclinations and activities. As a rule it expresses itself in attempts to preserve and protect life which is already in existence, but it may equally be manifested in the wish to *unfold potential life.** And there is also the need of expressing affection, which certainly contributes to the composite motives of the masculine wish for parenthood; the instinctive wish to take care of creatures who are totally helpless at first, and for many years dependent on his protection.

But here we again reach the upper layers of consciousness —which are, of course, more widely and acutely operative in some individuals than in others. In the fully conscious sphere there are religious concepts about reproduction consolidated into the dogmas and codes of varying creeds.

Another fully conscious incentive for a husband may be the theoretical conviction that maternity is a natural and necessary fulfilment of his wife's impulses.

Yet another conscious incentive is economic. Not so long ago, historically considered, children meant increased power and help in the struggle for existence for the masses of the people. This help has now been reduced to *nil* for most families by the combined efforts of recent social legislation, and the emancipation of youth. In fact, the demands of modern education and of the younger generation themselves have turned help *from* them into expenses on their behalf.

* This may be related to the creative impulse; see the remarks in Appendix XI. of the First Chapter, on the Orthodox Hebrew attitude to life.

But, for a few relatively small sections, children still have economic value, and where this is the case such prospective value can be crucial in the decision to " give life." *

The hope that children will give animation to the home, and strengthen the bonds between the parents by common interests and even anxieties, will greatly increase the conscious desire for offspring.

Finally, two further motives, fully conscious and rational, for desiring children. The first is the train of thought which anticipates old age and aims at finding support, comfort and interest in the children one has produced. And the second is the conviction that it is indeed not good for the first-born child to be alone.

Some of these secondary motives and rationalizations are even more definitely operative in women than in men. But here they form a part of the great basic maternal urge. In men there is not a similar " unitary " urge, and the various secondary rationalizations and accessory motives appear in different proportions and in more individual and sporadic ways. But their force may be estimated in the customs and laws of many ancient civilizations.† In our times and social climate, those who are frequently made acquainted with the psychic processes of their fellows have almost daily occasion to recognize these composite emotional patterns.

The *rationalized purpose* of obtaining support, comfort and interest from children in the later years of life, is a powerful incentive to parenthood. But in many married couples this purpose does not operate, and the wish for children remains weaker than in other people.

There are various causes for this. Probably one of the chief is the refusal to think of having children or of getting old, the intention of living to the full in the present, and the repression of all thoughts that disturb.

This attitude of mind is pronounced in the young married couples who deliberately avoid parenthood in the first few

* See Appendix II. to this Chapter.

† As, for instance, in the adoption customs of the Chinese and other Eastern people ; in the Levirate Marriage of Afghans, Persians and Ancient Israel, etc. See Appendix III.

years of life together in order to have " a good time." But we may also trace the refusal to look at the future in those cases where the harmony between husband and wife is so intimate and complete that they do not seem to notice the lack of the " normal " results of that harmony ! Or, rather, such couples do not need to repress the thought of old age, for it never clouds their minds ! One of the greatest charms of youth is that, to those who partake of it, there seems no limit to its duration, no " darkening slope," no " chance and change of mortal things." Vigorous and joyous young men and women are far more likely to realize the advisability of taking out Insurance Policies, or making financial provision for old age, than to face the fact that loneliness may be their lot. So a few words of warning are indicated here.

I would urge those young married couples who have a definite and most natural wish for children not to hesitate, and compromise, and defer the realization of that wish. *For, although fertility in marriage is not a fundamental condition of happiness in marriage*—yet children are the natural and psychologically necessary accompaniment of normal marriage between average human beings. For the individual psychic and emotional welfare of both parties, this form of life's fulfilment is important *in the long run.*

Therefore it is a mistake to defer the first conception and pregnancy for too long a time. Long before the tarriers think it possible that the " accepted time " is over, they may be faced with the verdict " too late."

And couples in whom involuntary sterility persists too long * should seek expert advice. For these reasons it is necessary to give in this study full and explicit instructions as to how a desired pregnancy may be achieved, beginning with the physiological processes which usher in, attend and immediately follow conception.

* What is " too long " ? Every case must in practice be considered and treated independently. But as there is so great a tendency to ask for precise dates and details, I would say : " too long " in cases of involuntary sterility means from *eighteen months to three years* after marriage has been consummated. In many cases of sterility, adoption should be more seriously considered than is usual to-day. See Appendix IV. to this Chapter.

The quality of possible children is almost as important to the minds and hearts of parents as their existence or their numbers; their health, their particular aptitudes and, in many cases, their sex, may mean almost as much to the parents as to the children themselves.

But we cannot deal with these matters here, for a brief discussion would be useless and an exhaustive treatment would mean a monograph consecrated wholly to the subject.

The significance of the *number* of children in a family is obviously great, whether for the parents or the children themselves; but detailed discussion would be irrelevant to our main subject.

One point must, however, be stressed: The inadvisability of limiting parenthood to *one* child only.*

For the parents this is inadvisable both on account of impulses, reactions and conditions which may be deduced from what has already been said on the urge towards parenthood, and also because of the constant anxiety about the present and future welfare of their "only treasure," and the psychic effects of this preoccupation; and, finally, because of their almost inevitable disappointments in the progress and personality of a child who has not much chance of real happiness.

For, even granted that an only child is better taken care of than one of many; nay, even pampered and indulged, yet toys and pettings are no sort of substitute for the habitual association with other children. *Neter*, in a manual on this subject, has gone so far as to characterize only children in general, in the following terms: spoilt, pampered, oversensitive mentally and physically, yet pert, unduly precocious, lacking in self-reliance, awkward and self-conscious! Further, he describes their particular faults of character (rather than manner, or neuro-muscular co-ordination) as egotism, vanity, irritability, instability, extreme resentfulness and self-will. Even those students of the subject who deny this indictment

* *Cf.* The address by Dr. *C. Killick Millard*, the well-known M.O.H. for Leicester, at the International Birth-Control Conference in London, 1922, pp. 216–219 of the Report of the Conference. Published by William Heinemann (Medical Books), Ltd., London.—(Tr.'s Note.)

with some indignation, have to admit the great difficulty and deprivation which overshadows the life of such children: their loneliness.

The lack of creatures of its own grade and near its stage of development, of their conversation, their interest, their opposition or approval, depress the vitality and self-confidence of the only child. At the same time, the company of adults has a far more frequent, profound and permanent effect than is wholesome as a preparation for life. The only child remains probably especially sensitive to unconscious suggestion, such as may be exerted through the facial expression or vocal intonation of the powerful and mysterious adults.*

Quite recently I was professionally consulted by a mother who wanted advice on her failure to have more than one child. She wanted more children, especially for the sake of her little daughter. She said: "I know the emptiness of an only child's life so well!" And we hear the same reflection so often from adults who have themselves been only children, that it sounds quite familiar. Yet the particular lady in question was not herself an only child. She was, however, the youngest of her brothers and sisters, and born some time after the next oldest; and this particular situation has many —though not *all*—the disadvantages of "only childhood," together with the additional handicap that the parents have grown too old and "set" in their views and habits. Those of my readers who care to consider the matter will find much food for thought.

We may certainly maintain that persons who have been members of large families are generally much more independent and efficient in their ways of life than those who have had only one brother or sister, or none. "For the child who is one of many, has been from the beginning, a member of an active community. Mutual education and correction, readiness to help one another and laugh at one another, prompt action, 'doing things' for the sake of doing them, *i.e.*, enterprise and resource are matters of course in such

* This sentence and parts of the last paragraph are cited from the Report of the Dutch Association of Specialists in Children's Diseases.

circumstances, and sympathies for other person's special situations and feelings are generally much more direct and keen than in the only child, whose altruistic possibilities have often been overwhelmed by preoccupation with what *I* feel and what *I* want." *

Should parents wish for as many children as possible ? The answer must be both yes and no !

Experience teaches that both parents of, and children in, large families are generally happy human beings *if and when the wife and mother keeps her health, and financial conditions are favourable.* I have seen a relatively far greater number of happy large families than of tolerably contented small ones, and I have no reason to believe my observations exceptional. But, it is equally incontestable that to overburden a woman with childbearing and child rearing destroys her physical and mental health, and that more children than can be adequately supported mean that the family deteriorates, if not in all ways, then in some. (*Cf.* Appendix V.)

It is, of course, impossible to lay down general rules here. But, after consideration of *pros* and *cons*, and excluding both the fortunate cases whose means and vigour suffice for further parental responsibilities, and the others in which grave medical and hygienic reasons make fewer children advisable, I would suggest that it is best for all parties if a family includes three children, or four.

This is best for the usefulness and happiness of the younger generation, and also for the happiness of married life itself ; for, though this happiness is *not* indissolubly bound up with parenthood, yet it can be disturbed and frustrated where parenthood is denied.

One of the principal reasons for this result is the possible divergence of wishes and feelings on this subject between the spouses. But we may suggest the following considerations :—

Broadly speaking, motherhood is, for a woman, the equivalent of the man's work at his trade or profession. It is

* *Harmsen*, p. 61.

unfortunate and undesirable, both socially and conjugally, for the husband to have no occupation or profession, whether as a means of livelihood or a hobby and chosen " calling." And the results are often equally serious if the woman's energies and interests have not their biological fulfilment. Her accumulated energy at high tension seeks other outlets which often involve excessive and impossible demands on her husband's time, means and emotional capacity. And on his physical virility as well. Normal women who love their husbands and have been aptly and affectionately initiated into sexual communion, have a much greater and more *continuous* capacity for intercourse than normal men, and this disparity may have unwelcome results if feminine erotic energy is not partially transmuted into reproduction and maternal emotion. It is beneficial and advisable therefore to bring more than one child or two children into the world, and to tend and rear them. This will guarantee the equipoise and distribution of vital force, which is the foundation of a wholesome marital harmony.*

But, if we assume three or four children to be desirable, that number implies due intervals between births and subsequent conceptions in order that the mother may rest and recuperate. Therefore, even a minimum of four children means that it is impossible to " leave things to Nature." Thus we are again faced with an inevitable alternative: spells of complete " continence " or the use of contraceptives.

As has been explained in Chapter I., complete abstinence for any length of time is thoroughly unnatural for normal and healthy adults, and injurious mentally and physically. And complete abstinence is equally harmful to the dual human entity of marriage itself, contrary to its purpose, and apt to endanger or even destroy mutual confidence, affection and sympathy. All this has been so fully argued and explained that I consider no further elaboration of the theme is necessary.

Therefore, all things considered, the physically, emo-

* *Cf.* the remark of *Paul Federn*, with special reference to neurotic tendencies; also Appendix VI.[87]

tionally and financially " normal " partners must use some kind of contraceptive.

This solution of their problem is neither absolutely safe from accidents nor, in many cases, agreeable and enjoyable ! But it is the Golden Mean between incessant pregnancy and parturition and unnatural abstention and, therefore, the path both of reason and altruism.

With reference to the safety of current contraceptive methods, it must be made plain that many of them may harm the health of one or both partners.

Some contraceptives almost always cause a certain amount of damage, at least if they are used uninterruptedly for years. Others again are only harmful if wrongly used, *i.e.*, used in an inappropriate case, and this happens very often.

The opponents of contraception, who may quote this statement in order to attack the *general principle* of fit and voluntary parenthood, must be immediately reminded, first, that damage to health is practically non-existent in the case of sound, appropriate and *individualized* preventive methods, and, secondly, that the recipes of abstinence invariably, and unrestricted fertility generally, have even more ruinous mental and physical results in married people.

But, if contraception is to be dependable, both the particular conditions and idiosyncracies of each case, and the particular method or appliance chosen, must be rightly judged and rightly applied.

And Nature does not help to make either judgment or execution easy in this matter ; *much less easy, in fact, than most lay persons, and many doctors, believe.* Let us consider a recent indication of the unreliability of current contraceptive practice. A single commercial firm, dealing in a preparation " to relieve irregularities," spends 30,000 *Marks monthly* on advertising expenses alone ! * *Would the business turnover this implies be possible, if " irregularities " occurred only in those women who never practised contraception ?* Indeed, the girls and women of to-day are neither so unsophisticated nor so passively lacking in sense of self-preserva-

* Case cited by *Magnus Hirschfeld* [88] from *Rohde.*

tion ! Only, for all their sophistication and emanicipation, they are just as *ignorant* of the theory and artistry of sex as were the women of Victorian times. And, be it added, so are the majority of contemporary men, though they believe themselves to be " thoroughly well informed and experienced " and " capable of taking jolly good care "—*such people are ignorant of essentials* and, therefore, use unsuitable methods or good methods in an unsuitable way ! The proofs of this widespread ignorance, or misleading half-knowledge may be found, not only in such social symptoms as the advertisement aforesaid, but in the data collected and collated by medical men and societies in this field.

Contraception is, therefore, only reliable if practised with some precise knowledge of facts, with minute attention and stringent self-control. Vigilance is the price of safety, here as elsewhere ! And even if they achieve their object, contraceptive methods too often seriously diminish specific pleasure. In fact, " such methods as are known and practised to-day often contravene the demands of Ideal Marriage by diminishing stimulation, disturbing and dislocating normal reactions, offending taste and effectually ruining spontaneous *abandon* to the act of communion." *

The loss of complete spontaneity † is the most painful accompaniment of contraception as usually practised, and may be due either to the choice of complicated methods which distract attention (or to clumsiness in using those methods), or to fear that the methods will fail, or to more profound psychic inhibitions. The cure for the first two groups of cases is greater variety and mastery of methods and technique. In the third section of this study I shall discuss the possibility of such choice of methods and local stimulations as will meet the needs of various types of case.

The third section of this inquiry will also deal more fully

* " Ideal Marriage : Its Physiology and Technique," by *Th. H. Van de Velde*. William Heinemann (Medical Books), Ltd., London, p. 317.

† I append a quotation from *Federn's* work—as Appendix VII. to the present Chapter—as it gives a comprehensive view of the factors operative in unwilling sterility and half-hearted birth control. These factors will also be discussed in detail.

with possible æsthetic objections and psychic inhibitions. But certain main points may be met here.

The æsthetic objection has some measure of validity. It would be absurd not to admit that many, *though certainly not all, contraceptive methods* are mildly or even acutely distasteful to normal sensibilities. But there are two answers to this. The use of these particular methods, with scrupulous care and convenience, and with a certain degree of delicacy and discretion (let us not forget that delicacy may be morbidly exaggerated as well as repulsively deficient !) can perfectly well reduce the disturbance—physical and psychic—to a minimum.* And then—we are faced by physiological facts : the persons who desire bodily communion in order to achieve communion of souls, and who cannot undertake responsibility for the normal consequences of bodily communion—must seek to prevent those consequences as a matter of elementary human decency and rationality, however irksome.†

The effective way to avoid distressing and complicated psychic inhibitions in the use of contraceptives is by clear and honest and explicit thinking, and by consistent conduct. We must be quite clear in our minds *what* we want to do ; *how* we want to do it ; and, above all, *why* we want it. There is hardly any sphere of human thought and action in which inconsistency and—in the true sense of the words—levity and frivolity punish themselves so automatically as in sexual and parental matters. And as levity, ignorance and inconsistency prevail widely, so also do their distressing consequences.

I know several cases in which the *technically correct* use of contraceptives has been followed by psychic disturbances of more or less grave type. In women, such disturbances—so far as my observation goes—generally take the form of painful and irregular menstruation and of abnormal local

* The quality of delicacy in these matters " cuts both ways." And let us not forget that sexual intercourse without any preventives, between people wholly lacking in delicacy of sentiment or of sensation may be extremely unæsthetic, squalid and repulsive.

† *Cf.* Appendix VIII. to this Chapter.

discharges ; and the course taken by these symptoms shows plainly that they are psychic or psychotic (mental) in origin, and arise from repressed anxiety that the methods adopted may fail, and also from irrational guilt or inferiority complexes. (The corresponding symptoms in men are diminished potency, ejaculatio præcox, etc.) I would suggest that the chief cause of the particular feminine morbid symptoms is the incomplete suppression of the (unconscious) urge towards pregnancy—a motive which exists in many more cases than is generally believed and may co-exist with a strong *conscious* wish to avoid parentage. The diametrical opposition between a very strong and definite conscious intention and a powerful wish below the surface of consciousness, leads to psychic conflict and its widespread results.

And men, too, often wish and hope that a coition may be followed by pregnancy—even though they do not consciously know that they wish this. But, of course, this is stronger in women—so much so that we may recognize the existence of an urge or impulse towards pregnancy ; of a positive *drive* towards the situations and attitudes which achieve impregnation.* And this makes the conflicts aforesaid more acute and more frequent in women than in men.

It would be advisable, in my opinion, to bear these possibilities in mind when undertaking psychotherapeutic treatment. They may be as potent in destroying peace of mind and whole-hearted courage as the more " usual " or usually admitted sexual conflicts and inferiority complexes.

We have mentioned some of the physical manifestations of psychic conflicts in the feminine organism. They are not confined to disturbances of menstruation ; a frequent and most inconvenient form is diarrhœa, and there is a whole range of cardiac symptoms, although we may well be excused from recapitulating the details of cardiac neurosis.

* This is, of course, partly identical with the maternal instinct, but has also something specific and independent. Pregnancy in women is not only the preliminary to maternity, it has its own tonic properties and effects, and it develops and stimulates a woman's whole body. Long before the discovery of the endocrine secretions, *Nietzsche* expressed this aspect of the truth in his famous, but often misunderstood, aphorism that everything in a woman was a riddle, with one solution : Pregnancy. Note pregnancy, not motherhood.

In their milder forms, at least, they are a constant theme of our patients' laments and I have only one comment to add to *Wenckebach's* [39] description : " The influence of psychic images and impressions on heart action, and especially on cardiac *sensation*, is infinite in range and diversity : the problem of cardiac neurosis on a sexual basis has many aspects besides Onanism and Coitus Interruptus." I would confirm this pronouncement by emphatically stating that patients often suffer from cardiac neuroses caused by the use of " artificial," *i.e.*, mechanical or chemical, means of prevention, as distinct from coitus interruptus.

The specifically sexual sensations and reactions are deflected or disturbed in characteristic ways, through psychic conflicts. The most immediate effect is an inhibition of erotic pleasure ; desire and preliminary excitement may be normal, but the climax and relief of the orgasm cannot be reached. Or there develops a perfect loathing for the actual use of the chemical or mechanical preventives—whose effect is, nevertheless, fervently desired ! Or again, an absolute aversion from any sexual approach may supervene. And the highest degree of psychic conflict is expressed by general and sexual antipathy—amounting to hatred—for the husband and/or for all men : acute and chronic sex antagonism.

Thus the psychic conflicts may vary from slight diminutions of voluptuous pleasure to deep-seated hostility and horror. These more extreme forms are generally the result of *enforced* use of contraception ; use by one partner under compulsion from the other. But these are much less often observed than the milder disturbances which arise from a mixture of sense of guilt for using preventives, with definite fear that the preventives may fail of their purpose—a double stress and menace to the twilight mind.

The inhibition of complete *abandon*, either wholly or partially, prevents the natural climax. There is not relaxation, release, refreshment, triumphant yet tender satisfaction. There is rather, only too often, the acute tension and diffused irritation well known to neurologists as typical of habitual coitus interruptus (but by no means *exclusively* the

results of that particular form of prevention). The resultant depression and exasperation may develop into either resentment towards the partner or anxiety neuroses or both. These feelings of haunting fear may either be directed towards some definitely imagined specific event or contingency, or they may remain as an emotional background of distress and dread, without any conscious object.

And the feelings of either guilt, fear or dread, with their resultant complexes, whether direct or indirect, may become so overwhelmingly clamant that the usefulness, wholesomeness and certainly happiness of two lives are destroyed; and thus the use of contraceptives may have an entirely contrary result to that which the users intended.

The particular series of psychic lesions is obviously more frequent in women; but in men, too, they are far from rare. Mentally, the male symptoms are identical with the female, but there is a certain organic difference, when nervous dread or disturbance reach a certain point, the man becomes psychogenically impotent, *i.e.*, impotent through mental or psychic causes. He is then incapable of coitus and this can be as disastrous—or even more disastrous—to the marriage and to all life in common than the corresponding feminine symptoms.

What of another method of preventing conception, *i.e.*, sterilization by operative surgery? Under certain circumstances its advantages are great, but it *can* occasionally have the same psychic effects on both partners as chemical or mechanical contraception. And this is probably the most signal proof that these processes of disturbance and inhibition are primarily, and often wholly, *psychic and not peripheral*, or dependent on local sensations or lack of sensations. I must make clear that such disturbances are relatively much rarer after sterilizing operations than after unwisely used contraceptives; nevertheless, the observation of such cases gives most suggestive and illuminating food for thought, both in the theory and practice of medicine.*

* We shall revert to this again, with special reference to women. Meanwhile, I would refer to the important contribution by *B. Milt* [40] in the "Zeitschrift für die gesammte Neurologie und Psychiatrie." *Milt* deals with the influence of conscious sterility after the partial operative extir-

We may well ask why should deliberate prevention of pregnancy by the resources of science and artifice be attended by so much difficulty and disadvantage. There are two great reasons. The first is psychic and emotional, for many persons have not formed any real opinion or conviction as to the rightness of contraception ; it is for them a convenience, apart from ethical principles, nay, even they *use a convenience of which they are secretly ashamed.* And the second is both intellectual and practical ; the lack of precise knowledge of all the factors which may promote or prevent their aims, and of what is naturally possible or feasible in the matter.

We shall deal with this second group of obstacles later in the course of this study. But the first category deserves independent consideration.

We have seen that the decision to avoid pregnancy by contraception is often based not on the conviction of the absolute ethical justifiability of such action, but on sheer convenience ; on a frivolity and levity which is really enormous and evident to any observer. And those who know its probable result can only register their grave regret.

The decision to limit the family, or to avoid parenthood altogether, is an extremely serious and important matter. It should only be made after careful consideration, self-examination and consultation between husband and wife. *And the agreement should be mutual.*

" Lightly, wantonly and unadvisedly " framed decisions and lines of action may be thundered at, or threatened or denounced, but real levity, ignorance and lack of perspective were never cured by threats or sermons. Knowledge is the way of defence here ; knowledge of their own nature and its factors bodily and mentally, and of the probable results of morally *inconsistent* actions—results which cannot be outweighed by the advantages which often prove illusory.*

pation of the Fallopian Tubes. In Appendix IX., I cite two cases illustrative of the destruction of the " libido " and " voluptus " in the husband of a sterilized woman.

* Many young married couples definitely postpone parenthood in the first years of marriage. They forget that the necessary methods spoil spontaneity in the early stages of mutual adaptation and thus they lose much happiness.

Another—very different but equally important—source of hesitation and divided counsel in these matters is the disproportionate weight given to certain traditional ethical principles. Thus, a married couple may have formed the decision to avoid parenthood on account of genuine and serious dangers to the wife's health, or lack of means to educate and equip children for the battle of life; that is for reasons of the most solidly actual and surely morally respectable description. They may have carried out their intentions successfully for several years. And then, "conscience," "nerves," the ghosts of traditional laws and customs may reassert themselves and they may become victims of "sense of sin."

The most impressive and unmistakable cases are those in which there has been surgical sterilization. When the risk of impregnation is *nil*, when the impressions and conditions leading up to the operation have faded in the conscious memory—then the religious scruples of tradition easily emerge from the Unconscious, especially in persons of limited intellect and dependent temper, and soul and home become battlefields once more! In other instances the conflict develops just as surely, but by more devious ways.

The traditional ethical concepts of parenthood have been exhaustively discussed in our first chapter. But there are other ethical possibilities; and I would wish to conclude this survey with a few comments on these "Ethics of Reverence for Life"—which are based on and develop with civilization. Few of us, however, have expressed these ethical ideals so finely as *Albert Schweitzer*,[41] or excogitated, developed and applied them so thoroughly as the philosopher of "Culture and Ethics" and the healer of Lambarene.

"Ethics means the obligation to meet all and any will to live, with the same reverence for life itself as my own urge. This is a basic moral principle. To preserve and promote life is good; to destroy and restrict life is bad." *

"What is the position of this great Vital Reverence in the

* *Albert Schweitzer*: "Culture and Ethics," p. 329.

combats between the moral necessity and the need for self-assertion, self-preservation ? " *

" Human decisions can only be subjective in this ethical conflict. No one can determine for another the extreme limit of possible persistence in the preservation and promotion of life. Each must decide alone, guided by the utmost reverence and sense of responsibility for life and lives other than his own." †

Other life and lives may be understood not only as actual but as potential existences.‡ And I emphasize that every individual human being and every married pair, must solve for themselves the riddle of when it is justified to give life and when it is justified to withhold it. None can dictate to them : but to decide, they must have two precious qualities as well as knowledge : sense of responsibility and unflinching steadfastness.

I have already indicated the results of hasty, frivolous irresponsibility, and the equally disastrous results of inconsistent and unstable currents of thought or emotion, leading first to restriction and then to repentance.

And I must reiterate, because of the deep importance of the issues involved—that the only way of avoiding endless difficulties, psychic, functional and in general practical life, *is to form a carefully considered and morally responsible resolution, and to stand by it, or else—with equal sense of responsibility—to follow out the dictates of whatever religion one believes in, with complete obedience and endurance.*

And, in the latter case, having decided that they will not—and ought not to—limit their marital fertility in any way, let the adherents of traditional religion live as though there were NO methods of preventing pregnancy ; and let them accept the consequences cheerfully and courageously, in the consciousness of having done what they believe is their duty —which is its own reward.

But, if a couple decides otherwise, and believes themselves morally obliged—or at least justified—in the avoidance of

* *Op. cit.*, p. 247.
† *Op. cit.*, p. 249.
‡ At least this is the feeling of the author, though *Schweitzer* does not touch on that particular theme.

pregnancy—then let them do as they think right : *let them be independent in judgment, steadfast in action, and remain so !*

In the words of *Schleiermacher*[42] : " Human beings should not spend their lives in timid calculation and deliberation as to whether they have infringed this rule, or evaded that—in incessant struggle between carnal inclination and moral reflection. No. They should, each of them, affirm the law of their own being, freely and gladly. Then, as each case arises, they should decide their actions on the basis of that spontaneous moral law, without hair-splitting or logic-chopping, and execute their decisions with ease and energy, unhampered by the torments of doubt and dread."

APPENDICES TO CHAPTER III

I. Extract from article by *Wilhelm Reich* on " The Function of Orgasm " (p. 127 of " Neue Arbeiten zur ärztlichen Psychoanalyse." Edited by *Siegmund Freud.* No. VI. International Psychoanalytic Publications, Vienna, 1927).

" There is a general belief that marriage is only confirmed and cemented by the child. This is only the case under certain specific conditions. One of the most fundamental of these requisite conditions is—*psychogenital harmony between the child's parents.* If this psychogenital harmony is not achieved, children only become a fresh source of antagonism between man and woman, as well as a stifling social and moral fetter, which can only be made tolerable in cases of exceptional financial prosperity. If several children are born—under disharmonious conditions—the whole affection and solicitude which has been starved and thwarted in the marital relationship is showered on the children ; but not equally or equitably ! The parents ' take sides ' and each ' plays off ' their special pets against the other partner's favourites. This must have the most unfavourable consequences on the character formation of the children ; they are driven into perpetual conflict, both among themselves and with their parents. These disharmonious antagonistic marriages are often the soil in which grow ' multiple personalities ' ; phenomena derived, according to *Freud,* from early, contrary and mutually incompatible identifications."

II. The Economic Advantages of Parenthood.

" At the present time, and under current social and fiscal conditions, having children is an economic advantage to relatively

few married couples. But it may reasonably be expected that this minority would grow rapidly in any State or States which took the trouble to systematize their laws of inheritance and their taxes in such a manner as to make parenthood once more an asset, rather than a liability.

"The characteristic difference between the past and the probable future in respect of Parenthood, is perhaps that, whereas in the past to *have* children brought material gain to many persons; in the future *it may bring more disadvantages to have no children than to have some*—at least in the States I have in mind.

"A further contrast between past and future is in the distribution or equilibrium of fertility. The past group of persons to whom children were an asset were the less prosperous members of the community; in the future we may hope they will be the moderately or decidedly well-to-do; for such a change would favour the general *quality* of our population. The State could so arrange its laws and economic distribution as to make the more prosperous keep up their numbers, while making large families unprofitable for those less favourably situated."

III. Levirate Marriage and Adoption.

"The term Levirate is derived from the Latin *levir*, meaning the brother of any woman's husband. The Levirate Law or custom, compels the brother-in-law to marry his brother's wife if she becomes a widow without having borne a son (see Deuteronomy xxv. 5–6 and the Book of Ruth). This custom naturally prevailed—and partly still prevails—among nations or tribes who attached particular importance to progeny. Students of this subject attribute Levirate Marriage partly to economic causes, partly to psychic and emotional motives, which I have suggested. A determining factor for Oriental peoples—which has no force, or very little, for us of the West—is Ancestor Worship. He who has neither begotten nor adopted a son, has no one to perform the due and necessary ceremonies of this worship.

> "'That stage completed, seek a wife,
> And gain the fruit of wedded life,
> A race of sons, by rites to seal,
> When thou art gone, thy spirit's weal.'" (43)

The relevant customs in China and Japan are depicted in the essay which *Adolph Basler* contributed to *Max Marcuse's "Ehebuch"* (44) under the title *"Eheschicksale und Völkerschicksale"* ("The Fate of Marriages and the Fate of Nations"). I quote verbatim from pp. 67–68.

"A Chinese friend has told me that there are many families

among his people who can trace their descent from three thousand years. Even if the remotest ancestors, and some of the other links in this human chain are more or less mythical, the same is the case in many five century lineages among ourselves. We may therefore admit that the ruling families of China reach an authentic age which has no parallel in Europe. The same is true of Japan. This antiquity of racial ruling stocks is, in my opinion, the sole reason for the age-long survival of Chinese Culture. No individual Chinese or Japanese remain bachelors, for their religion and their whole attitude to life demand male offspring. This is a striking instance of the extent to which the family is influenced by the whole ethical theory, or social philosophy of a race, and this in spite of the notorious and universally admitted vices of the Chinese. In China and Japan, wars have had the same devastating influence as in Europe, and the national Culture has long passed its zenith, nevertheless, the ancient families continue and survive. *If there are no male heirs, recourse is had to adoption.* The adopted son, has, of course, no heredity from his adopting parents, but the education and nurture he receives, initiate him into the family tradition. He is a better representative of an ancient stock, which has become extinct in the male line, than the son of some upstart, who has ' made money ' over night, like a mushroom growth. Moreover, the parents must, presumably, be far more strictly selective in bestowing the privilege of adoption, than the ' struggle for existence,' which often favours commercial acumen and insensitiveness at the cost of other qualities."

IV. Extract from " Soziale Geburtshilfe und Gynäkologie," by *L. Fränkel.* Breslau. Edited by *Urban und Schwarzenberg,* Berlin, 1928.

" If a woman who desires children intensely, fails to conceive, in spite of all suggestions and resources, the medical adviser should not delay to advise the adoption of a child ; he may well point out the advantages of such a course of action, as well as be helpful in selection of the favoured child. In most women the mothering impulse is so deeply rooted that the first hesitation is easily dissipated. Indeed, even when the chosen child proves very unsatisfactory, the adoptive parents are, as a rule, quite blind to its faults. But even totally uncritical adoration is psychologically preferable to hopeless sterility.

" We may also take into account the vast amount of contemporary misery and social wreckage, the number of War orphans and illegitimate children in our midst. I therefore consider it the direct duty of medical men to suggest adoption in cases of childless marriage, and to help in the selection of suitable children. Before the War, the laws relative to adoption were very stringent. The adoptive parents must have had passed their fiftieth year, and

a medical certificate was demanded that the woman was totally incapable of carrying to term and bearing a child of her own. These paragraphs are now much more leniently operated ; if the medical adviser can give the opinion that it is highly improbable that the woman can become a mother, leave for adoption is given." *

In the main substance of *Fränkel's* remarks I must entirely concur, and may add that I have had several cases of adoption under observation for years ; and they have been quite as happy and as beneficial to the characters of all concerned (and not least to the adoptive father !) as normal parenthood. If this seems paradoxical to my readers, they may be reminded that these are cases where a very deep and definite wish for children has been met ; a wish deep and definite enough to outweigh all the objections and disadvantages of the situation. The sense of " second best " and substitute happiness soon disappears ; the adopted child becomes as their own flesh and blood. But, of course, I must again stress the need for very careful consideration and selection of candidates for adoption.

V. Extract from the *Berliner Tageblatt* (No. 297) of 26th June, 1928. Six Children in Seven Years.

" From the notes of a Berlin Social Worker. Communicated by *Dr. Alice Vollinhals*, Director of Maternity Care in the Clinics of the Berlin Health Insurance Bureaux.

REPORT OF A VISIT.

" After repeated knocking the door was opened by a group of small children.

" In a room five yards long by two and a half wide, and containing two large beds, two children's beds and a little table, a woman who has borne a child lies on sheets that have not been changed since that birth took place. The latest arrival lies on a pillow on the table. The others, five in number, are crawling on the floor or climbing on to the beds. The second youngest—the toddler—is on one of the beds devouring sugar, which it takes out of a paper bag by handfuls. A loaf is lying on the floor, and the children pull off pieces and eat them.

" The beds have no sheets or blankets, with the exception of the mother's. Mattresses and feather beds are damp and soiled . . .

" On the floor are flung garments, soiled underclothing, swaddling clothes, mugs, spoons, paper and a pot-de-chambre, which the children have used and then upset.

* There is now a fairly detailed and reasonable provision for adoption in Great Britain as well, since 1926.—(Tr.'s Note.)

" Since the birth took place—three days ago—the window has not been opened, and the room is overheated.

" On the mother's bed lies a carpet beater, with which she threatens her brood.

" The husband and father has had to go to work at 6.30 a.m., but before his departure he made coffee and prepared slices of bread and butter for his wife and children. The midwife's visit is due for the evening.

" The family has been for a fortnight in their present dwelling, which consists of two rooms and a kitchen. Structurally, it is in very good repair. The (larger) living-room is quite empty of furniture ; in the kitchen are only the hearth, two saucepans and a pail.

" It is not easy to bring any order into this chaos. There is no chest of drawers and no cupboard to store the articles of clothing ; no basin for the soiled garments, or little bath for the baby ! I set about the most necessary jobs, made the beds, cleaned up, and did some rudimentary cooking.

" The children showed themselves to be amazingly adroit and helpful in spite of their tender age. They were all on the move, even the two-year-old ! Each had its own job ; the eldest ran out to make the necessary purchases ; another fetched broom and dust-pan ; another piled up the briquettes that lay about the passage. And, as a great treat, they showed me their pet game ! To press the button that released the flush of water in the corridor closet ! ' Auntie, Auntie, just look ! If you push that, the water comes running down.' . . .

" I may report that our organization thereupon provided the necessary furniture, together with a complete layette and cradle and a baby's bath ; and also provided for the expenses of proper care during recovery, and ' home help ' for the children."

Thus far, the Welfare Worker's report. In spite of all this S.O.S. work, the woman *took her own life, and took her children with her.* The reasons ? Nervous prostration and exhaustion. Within seven years this woman had borne six children ; *she was pregnant, practically without cessation or respite.* Is it surprising that, sooner or later, human reason collapses and human nerves rebel and seek oblivion ?

VI. Quotation from *Federn-Meng,* " Das psycho-analytische Volksbuch " (" Psychoanalysis for the People "), Hippokrates-Verlag, Stuttgart, Berlin, 1926, p. 245.

" In childless mothers, or those who have only one child, the emotions are apt to be stunted on the ' mothering ' side ; too little psycho-physical energy goes to that aspect of women's nature. In many cases this is due to the husband's exorbitant

demands ; he wants all the woman's love and devotion for himself alone. The long forgotten Œdipus complex reappears in the mature man, as jealousy of the Unborn. He wants to monopolize his mate, just as he wanted to monopolize his mother, when he was himself a child. But—at least in monogamous marriage—strongly potent men have less sexual capacity and desire than women who are thoroughly vital in mind and body, and who are not mothers. Sexually normal partners can mutually adapt themselves. But, where there are neurotic tendencies, the inhibition of maternal functions on the one hand, and the inadequate sexual gratification on the other, act as veritable forcing-houses for such tendencies."

VII. From *Federn-Meng* (as above), p. 242.

"For full sexual pleasure there must be not only bodily fitness on both sides, but also a certain degree of mental freedom and spontaneity. This frame of mind becomes impossible if conception is prevented *by methods in whose efficacy the woman does not believe.* Thus, postponement of the first conception always means a certain loss of joy. Often this is unavoidable, but, generally, the child is prevented from motives of cowardice, caution, vanity or laziness, and without sufficient thought for the future. In later life there is often enough regret, when a child is definitely desired but not conceived, as may easily happen after unskilled (criminal) abortion."

VIII. Extract from *Havelock Ellis'* "Little Essays of Love and Virtue" (A. & C. Black, Ltd., London, 1922, pp. 72–73).

"All this confusion and evil comes of the blindness which cannot know that, beyond the primary animal end of propagation in marriage, there is a secondary but more exalted spiritual end.

"It is needless to insist how intimately that secondary end of marriage is bound up with the practice of birth-control. Without birth-control, indeed, it could frequently have no existence at all, and even at the best seldom be free from disconcerting possibilities fatal to its very essence. Against these disconcerting possibilities is often placed, on the other side, the unæsthetic nature of the contraceptives associated with birth-control. Yet, it must be remembered, they are of a part with the whole of our civilised human life. We at no point enter the spiritual save through the material. *Forel* has in this connection compared the use of contraceptives to the use of eye-glasses. Eye-glasses are equally unæsthetic, yet they are devices, based on Nature,

wherewith to supplement the deficiences of Nature. However in themselves unæsthetic, for those who need them they make the æsthetic possible. Eye-glasses and contraceptives alike are a portal to the spiritual world for many who, without them, would find that world largely a closed book.

IX. From the Essay by *Otto Herschan* "On the Influence of Gynecological Operations on the Sexual Life of Both Partners," published in the *Zeitschrift für Sexualwissenschaft und Sexualpolitik*," Vol. XV., 1928, No. 4. Marcus and Weber, Berlin.

"The first case I wish to quote was that of the wife of a country squire whose husband was vehemently desirous of children. The woman herself, at thirty-two years of age, was pregnant for the eighth time (!) Four of her own children are living and three from her husband's first marriage. She had double pulmonary tuberculosis. The medical man suggested termination of the pregnancy and sterilization. The husband objected as, he said, he could not have intercourse with his wife if he could not possibly procreate a child. He declared that any preventives weakened his potency, even with his first wife.

"Finally he agreed to sterilization for his wife's sake. Six weeks after the operation attempted intercourse was resumed, and completely failed: *ejaculatio præcox*. Subsequent efforts also failed. After long consultations and psychic tests, it became possible to locate and overcome the trauma at the root of this disturbance. The complex had been developed in his teens; he had had a series of casual encounters with the girls on his estate and formed the notion that a 'really strong' man ought to be able to beget a child every year!

"In the second case, a woman of 42 had already had three children; she suffered from myoma of the uterus and a radical operation was, therefore, suggested. For ten years coitus interruptus had been practised, as the husband utterly refused to try preventives, or to permit her to try them. The woman declared that her husband could only have connection with her if he thought she could conceive thereby. They had formerly tried preventives, but these had lead to failure of potency; and at first he could not manage coitus interruptus either. The family doctor had to tell him that coitus interruptus was much less likely to prevent pregnancy than contraceptives, before he was able to employ this method! After the extirpation of the wife's uterus the man's potency again failed; the symptoms were those of ejaculatio præcox. No explanations were of any use, as the man had the fantasy that the woman was castrated and 'not really a woman at all any more.' After attempts at psychotherapeutic treatment, the case had to be dismissed."

FIRST INTERMEZZO OF APHORISMS.

I.

That which is not yet living awakes to life ; that which already lives generates life ; that which was but part of a living organism, is given life.

Hippocrates.

II.

Every man and every woman holds his or her sexuality and reproductive power in trust for humanity.

Grant Allen.

III.

Racial suicide in the upper sections of society has been typical of every civilization ; and I think it is far more due to self-seeking than to *Malthus*. *Van Oss.*

IV.

Dost thou fear Death and desire the boon of life never ending ?
Live then for All who live ! When thou art gone Life survives !

Schiller.

V.

The extinction of the old stocks and their rapid supersession by upstarts gave the death wound to the Roman race, and the Roman culture.

A. Basler.

VI.

Ethical demands and duties cannot be logically demonstrated. They exist : for they are based on needs and values which are beyond the reach of science, for science is essentially descriptive and expository.

Wilhelm Reich.

VII.

A nation must have a conscience, just as much as an individual.

Max Müller.

VIII.

Cultures are not organisms. The organic entities in History are racial stocks. Cultures die when the races who have created them perish ; and the death of races is no inevitable doom.

Oswald Spengler.

IX.

Nothing is more dangerous than science without poetry, technical progress without emotional content. The proof lies

in the hypertrophied intellectuality and rationality of our age, and the simultaneous degeneration of sentiment to the sub-human level.

H. St. Chamberlain.

X.

The official organized Religions are losing all their influence on human emotions and conduct, as they cannot adapt themselves to the rapid evolution of our age and its discoveries of the intricate processes of matter and mind.

Sajatovich.

XI.

Value and reward womanhood and motherhood differently! Then women will gladly, and with fully conscious purpose, volunteer for the fulfilment of their deepest needs, in a new way: the way of freedom.

Heinrich Dehmel.

XII.

People have given up having children, for they have forgotten how to love them. And that is a natural—though terrible—reaction. For centuries, women have been told of the privileges and "joys" of motherhood: as though the bearing and rearing of children were all pure joy! No word of the pains, the anxieties, the effort which children mean to women! To-day, the pendulum has swung to the opposite extreme. Motherhood is viewed as a burden only. And there is a systematic restriction of the tenderness and pride inspired by each little head as it rears itself and grows.

Humanity fears the Golden *Via Media*. For human hearts are essentially unreasonable.

Yvonne Schultz.

XIII.

No one is so well qualified or so fully entitled to state her own intimate feelings as woman herself. She knows and has always known, that she has to endure the greatest sufferings and burdens that the race may live. But she also knows that her efforts and sacrifices are her joy and pride—if the struggle for existence and the social injustices of which she has been the victim, do not overweight the balance of pain; that motherhood can be her supreme happiness and her supreme achievement, and that the maternal instincts are the sources of her strength and her charm.

Gisela Urban.

XIV.

The woman's emotional life needs sustenance by alternating maternity with regulated sexual happiness, if so it may be termed.

Failing both of these, as is so commonly the case, her emotional life needs other satisfactions and outlets, and comes in some respects to resemble the frustrated necessities of spinsterhood.

W. H. Maxwell Telling.

XV.

All things in Love are riddles: their solution is the child.

Schopenhauer.

All things in woman are riddles: And all things in woman have *one* purpose. That purpose is pregnancy.

Nietzsche.

XVI.

The special wonder of sexual union is the momentary fusing of consciousness: and the resultant permanent fusing of lives, through procreation.

Schleiermacher.

XVII.

Sexual desire is the primary impulse in human affection, and its gratification serves as high a purpose in making human happiness as in making human beings.

Harold Cox.

XVIII.

Not merely to bring children into the world, but to have fit children whom they can rightly train must be the determination of a wedded couple.

The Bishop of Birmingham.

XIX.

The sexual act is the transcendent of that mutualness which is the aim and end of all love whatsoever, blessing him that gives equally with her that takes, and of which mother and suckling are the complement—the essences of sexual and parental affection, in their turn, the joint roots of all good will.

Henry Hamill.

XX.

The child is a living token of the partnership of its parents.

Schleiermacher.

XXI.

Marriage is service; the joint service of husband and wife, to one another and to the race.

Rudolph Fischer.

XXII.

Children are the blessing of marriage, but not the true *purpose* of marriage.

XXIII.

Marriage itself has its intrinsic meaning and purpose apart from offspring : that is the companionship of the spouses, in flesh and spirit.

XXIV.

A marriage without its spiritual side is below human dignity and powers ; and, without its carnal side, beyond human purpose and powers. If either side is lacking or inadequate, the marriage bond is in peril.

XXV.

One of the main tasks set before education and organized religion to-day will be the reinforcement of individual responsibility, in the face of widespread recklessness, and the nurture and inspiration of the desire for parenthood.

*D. Jansen.**

* Aphorisms XXII. to XXV. have been taken from the Essay on "Birth Restriction" by Pastor *D. Jansen* in the "Christliche Volkswacht" ("The Christian Watchtower"), a periodical published in Hamburg.

PART II

THE ACHIEVEMENT OF DESIRED PREGNANCY.

CHAPTER IV

THE PHYSIOLOGY OF REPRODUCTION

WE can only deal here with the physiology of reproduction in so far as is necessary in order to elucidate the problems of promoting or preventing conception. The reproductive process itself is certainly one of the most interesting and complicated in the whole range of animate nature.

But persons who wish to follow our explanations, and either achieve or avoid parenthood thereby, must thoroughly master the contents of this chapter, as these contents, together with a fuller treatment of sexual physiology in "Ideal Marriage," form the basis of the knowledge of how to attain either fertility or the reverse.

Humanity is under the same biological laws governing the transmission of life as the other members of the highest mammalian order of vertebrates. Generation or fertiliz[illegible]s tion takes place by means of the union of the male cell [illegible]ery *spermatozoon*, with the female cell, or *ovum* or *ovulum*, w[illegible]sible the body of the woman. Sperm cell and ovulum [illegible]mutual into one new cell or zygote, which contains all the [illegible] normal necessary for the development of a new living cre[illegible] helps the the hereditary qualities imparted by both paren[illegible]

But certain conditions and preliminary [illegible]l front of the necessary for fertilization to be effected in a n[illegible]næ—the *glans*

In the man there must be a supply of [illegible]y sensitive and

and vigorous sperms, and the capacity to discharge them into the feminine organ.

In the woman there must be at least a functional ovary, in which the ovulum can be formed, and formed so as to be apt for fertilization. Further, the process of ovulation, or extrusion of the ovulum, must take place in an adequate manner, and there must be a genital apparatus or genital tract—Fallopian tubes, uterus and vagina—for the reception of the male element and its fusion with the ovulum.

Even when these anatomical and physiological conditions are adequate, there must be a natural impulse strong enough to bring about sexual intercourse. The sexual impulse must be regarded as nature's dynamic of reproduction; and it often develops temporarily into the most vehement conscious desire of which humanity is capable.

Thus, the original nature and purpose of the sexual urge was reproduction and the preservation of the species. But, with the lapse of ages, it has become more individualized, and may now be regarded, at least in humanity, as a double impulse: for sexual approach, and for sexual satisfaction or detumescence—relief of tension.

The force of this twofold sexual impulse is individually determined by organic constitution, *i.e.*, by the glandular structure and secretions, or hormones, of each separate human body. But the conscious wish for children can be directed and controlled by reflection and volition, and thus differs very widely from person to person, and according to circumstances.

The reproductive process begins with the sexual act which is, at the same time, the only link in the sequence of reproductive events which can be decided by the wishes and choice of its two participants. All the other stages, such as the passage of the ovulum down the tubes, and of the sperm cells upwards to meet it, their merging and adhesion to the uterine wall, are independent of the consciousness and of the will of the parent organisms.

A woman can have intercourse, provided her vagina has not been obliterated or deformed by accident, disease or

congenital abnormality. But in men, effective virility depends on erectile capacity; the penis must be able to become a phallos. In a normally healthy man this possibility depends on an adequate stimulation of the spinal nerve centre governing erection. This nerve centre is situated in the marrow of the sacral region, and connected both with the cerebral cortex and the local or genital nerve system. If the stimulation of this centre (either peripheral or cerebral in origin) is strong enough, there is an increased flow of blood into the corpora cavernosa of the penis and, at the same time, by the peculiar " locking " mechanism of that organ, the blood cannot immediately flow back again. The hitherto small and drooping organ becomes full of blood, and increases notably in both length and girth. And, at the same time, its position and angle to the rest of the body alter considerably. This effect is not only caused by the increased congestion, but also by the action of the powerful muscles round the roots: the bulbo-cavernosus and the ischio-cavernosus. Thus, several factors, nervous, vascular and muscular, combine to give the male genital apparatus the position and tension necessary to penetrate the vagina.

A further accessory process is the secretion of a thin and very slippery mucous substance from the glands which open into the urethra (*Cowper's* glands). The traditional term for this secretion, used in moral theology, is " distillation "; and we have not been able to improve on this term in medicine. The secretion makes the tip of the phallos slippery and enables it to pass more easily through the feminine outer orifice or *introitus*, and, if the woman experiences an adequate sexual emotion, her vestibulary glands (*Skene's* and *Bartholin's*) secrete a similar clear slippery liquid. In all biologically normal and ethically defensible coitus, there is sexual emotion in both partners; mutual desire leading to mutual gratification, and thus the normal process of " distillation " in both partners greatly helps the accomplishment of the act.

When the phallos enters the space directly in front of the vaginal orifice—the so-called vestibulum vaginæ—the *glans* or tip comes into contact with the highly sensitive and

excitable *clitoris* of the woman, and thus excitement is heightened in both partners. The phallos presses forward, through the dilated introitus and into the vaginal passage, where it is clasped by the vascular and velvety vaginal walls and by the important feminine muscles, constrictor cunni and levator vaginæ. The most sensitive portion of the phallos, the glands, penetrates as far as the portio vaginalis, whose mucous surface is of extraordinary softness and susceptibility. Moreover, the walls of the vaginal tube are extremely elastic; they are an intricate natural web of mucous membrane, muscles and connective tissue, and clasp the invading organ closely; while the bulbi-vestibulari become intensely congested, the muscles contract and the womb moves forward and downwards towards the introitus. All this increases both stimulation, congestion and sensation. The clitoris is pressed forward against the base of the male organ, so that there is a double pressure and friction, both within the vagina and outside (vulvar or clitoridal). All these stimuli and sensations lead to the utmost possible tension in both partners, and to the relief of that tension by the ejaculation of the seminal fluid or emission in the man, and by acute rhythmic contractions in the genital apparatus of the woman; while both the man and woman experience the orgasm or culminating intense pleasure, followed by complete satisfaction and relief.

The amount of seminal fluid spent by the man is approximately between 3 and 3½ c.c. on each occasion: the smallest recorded amount is ¾ c.c., and the largest 6 c.c. Each ejaculation contains between 200 and 500 million spermatozoa. The spermatic fluid is flung against the exterior *ostium uteri* and portio vaginalis, with an impetus which, in the most favourable circumstances, sprays the spermatozoa directly into the cervix. If the woman lies in the most usual coital attitude, on her back, the remainder of the fluid ebbs into the *posterior vaginal vault* (Laquear posterius, or receptaculum seminalis) and forms a minute pond or lake (see Plate I., No. 17). Simultaneously, the orgasmic contractions of the uterus act as a kind of suction pump, and the organ itself alters its position, so that the outer extremity of the

cervix (the so-called exterior *os*) is dipped into the seminal lake (Plate IV., Nos. 12–14). The Kristeller, or dense mucus plug, in the external os (Plate III,, Fig. 2, A. and B., Plate IV., No. 13) may protrude itself into the seminal fluid and slip back into its normal position, covered with spermatozoa, which are thus introduced into the womb. But they can also reach their destination by means of their own independent and relatively rapid movements, which are probably facilitated by the chemical composition of the secretions of the cervical canal.

But, in order to achieve fertilization, the sperms must make a further venturesome voyage into the upper and less accessible portions of the genital tract, before they meet the ovulum. Their path is shown by the dotted line on Plate IV. This upward progress is favoured, or rather made possible, by: (1) the independent motion of the sperms; (2) by the alkaline reaction of the cervical mucus, which preserves and invigorates them; (3) by the peculiar capillary current in the female genital tract, which is directed downward and outward, while the sperms, by their intrinsic nature, always move against the stream; and (4) finally, by various chemical or chemistactic attractions.*

It is probable that, in human beings, the sperms are very seldom ejaculated straight into the cervix, as happens normally in the coitus of various animals. But the probability of this direct ejaculation may be greatly increased or modified by appropriate coital positions and actions.

et us assume that the spermatozoa have reached the *os uteri* and entered the cervix. They drive forward irresistibly by means of screw-like movements of their tails, upward and onward. They reach a relatively astonishing speed, which is computed to be between 1 and 1½ mm. in three minutes; a speed which would make it possible for an ovulum within the Fallopian tube to be fertilized some hours after coitus—the spatial distance traversed by the invaders being between 15 and 20 cm. Of course, if the rate of spermatic motion in the female genital tract remains as high as in the seminal

* See Appendix I. to this Chapter.

fluid outside the woman's body, *i.e.*, under the microscope—then fertilization could take place much sooner, for the rate of advance under the microscope is about double—*i.e.*, 3 mm. per minute. It is possible that this may sometimes be the case.*

Even if an ovulum has not recently been extruded into the tube, following a follicular rupture, fertilization may occur, as the sperms may remain alive and active in the tube for a considerable time and await the ovulum released by the next follicular rupture. Gynecological opinion is widely divergent on the possible length of time during which sperms remain capable of fertilizing. But there is much evidence to support the belief that this is possible for as much as *ten days after coitus*—under favourable conditions.†

Probably, however, an invading sperm has no need to await the ovulum; but they meet and merge, between twenty-four and thirty-six hours after the coital act. This probability is increased if the act has taken place at a favourable date in the monthly cycle, or if the woman has enjoyed active participation and vigorous orgasm, by which ovulation has been possibly slightly hastened.

The sperm cells *which remain within the vaginal canal* are generally so rapidly destroyed by the slightly acid vaginal secretions that there are none living within four hours after emission. Sometimes their life is longer, owing to special conditions or types of secretion. After forty-eight hours, the researches of *E. Runge*[45] proved that even the dead sperm cells were, as a rule, eliminated.

What of those sperm cells which traverse the cavity of the womb, and the whole length of the tube, and emerge into the abdominal cavity in the neighbourhood of the ovary? *As a rule*, they meet certain destruction, being at once attacked and absorbed by the white corpuscles of the peritoneum (*Hoehne* and *Behne*[46]).

But there are exceptions even here. There are on record authentic cases of ovarian impregnation, and even abdo-

* See Appendix II. to this Chapter.
† See Appendix III. to this Chapter.

minal impregnation! The spermatozoa had defied the defensive forces of the white corpuscles and united with the ovula beyond the Fallopian ducts.

In the process of fertilization only one sperm out of its myriad fellows enters the ovulum. All the rest perish, and they are either eliminated or absorbed by the mucous membrane of the genital tract. We shall deal further with the effects of this absorption, when considering the causes of sterility.

The normal place of meeting between the sperm and the ovulum is within the Fallopian tube or oviduct, between its junction with the uterus (or *pars interstitialis tubæ*, Plate II., No. 7, and Plate IV., No. 17) and the beginning of the wide-fringed mouth of the oviduct, in the abdominal cavity (Plate IV., No. 18), and the nearer the latter extremity the better.

But the sperms should reach their goal as freshly vigorous as possible. *It is therefore advisable, when impregnation is desired, to facilitate the entrance of the sperms into the cervix as soon as possible.*

Let us now consider the Odyssey of the ovulum to meet its mate, as depicted on Plate V. The diagram * represents a frontal section through ovary, tube and adjacent upper portion of the uterus, on a scale larger than life. It should be compared with Plate II., which is life size.

When the ovulum has ripened in the Graafian follicle, it is extruded from the ovary about the twelfth day after the onset of the last menstrual period. We are not yet certain of the exact dynamics of the follicular rupture and extrusion. In some cases the ovulum is extruded spontaneously, when the follicle has ripened fully, but there are also, undoubtedly, cases where the excitement and general tension of coitus have "touched off" the follicle and released the ovulum. In certain animal species this is even the rule; ovulation occurs at or just after the sexual act.

In Plate III., Fig. 1, a ripe Graafian follicle just about to

* This diagram and that on Plate II. are both adapted from the originals in *Sellheim's* article, with certain modifications which seemed advisable.

rupture is depicted on the surface of the right ovary. On Plate IV., No. 20, is the section of a follicle which has just ruptured; and on Plate V. the extrusion of the ovulum is depicted. On Plate VI. is an enlarged Graafian follicle, just before rupture, and enclosing the ovulum. Fig. 2 on the same plate is drawn to a larger scale and shows the ovulum which has just been ejected and is still embedded in the follicular fluid.

The ovulum has a relatively short way to travel compared to that of the invading sperms. It is sprayed forth from the ruptured follicle into the peritoneal cavity, and there it is caught and gently *wafted* into the wide-fringed mouth of the oviduct, or tube, by the joint action of the capillary current, the suction of the tube and the wave-like motion of the small fluid content of the abdominal cavity, as the woman breathes. The fringed mouth receives the little cell and the involuntary and faint muscular contractions and capillary current of the oviduct bear it along to the cavity of the womb. The ovulum, however, does not itself move forwards, as it has no motor apparatus; it is at the mercy of the current, like a rubber ball which is carried shorewards by the gentlest play of the waves.

But, within the ovulum, either before it is engulfed in the oviduct, or just afterwards, certain significant changes take place, making it apt for fertilization. These we shall describe in due course.

I am in agreement with the large number of medical writers who consider that unfertilized ova remain alive—*i.e.*, capable of functional development—for some fifteen days after ovulation. The most favourable time for fertilization is, however, as near the follicular rupture as possible; that is to say, between twelve and thirteen days after the onset of the last menstrual period. Experience proves that most conceptions take place at this time.

But experience also teaches quite as emphatically that there is no day of the monthly cycle at which women cannot conceive. This may be partially accounted for by the theory of *R. Meyer* [47] that the ovulum sometimes remains in the

ruptured follicle and is not immediately flung forth into the genital tract. It may remain in its ruptured follicular nest, which at once develops into a *Corpus Luteum*, and be shed off from the ovary a few days later than might normally be anticipated. Thus, the process of fertilization may also be delayed.

Why is sexual congress at the day and hour of ovulation —*i.e.*, follicular rupture—so specially favourable to fertilization ?

Not only may a follicular rupture already due—or slightly retarded—be accelerated by the excitement of coitus, but the sperm cells will arrive more rapidly and in greater vigour in the upper genital tract ; for the vaginal secretions have a specially favourable alkaline reaction about this time in the month, and enable the sperms to move more quickly and survive longer. Moreover, the ovulum, which has undergone further changes during its passage along the tube, finds the uterine membranes in the most appropriate condition for its implantation or nidation—adhesion to the uterine wall (see Plate V.).

Further factors must be considered in estimating probabilities of pregnancy. Biological experiments have proved that the ovulum is most apt to receive and merge with the sperm cell immediately after the first changes in its own composition, which enable it to become fertile. In human beings these processes occur very shortly after ovulation and follicular rupture, and it is assumed that they are in some way connected with the ejection of the ovulum by that rupture, but they are not *necessarily simultaneous* (see above).

The second series of changes in the ovulum follows its penetration by a sperm ; it is, however, supposed that the ovulum may become over-ripe before this penetration and then the chances for normal and successful fertilization are less. For, apart from the *slightly* less likelihood of the merging of these two elements, there is a greater likelihood of disturbance in the normal development of the product of conception. The latter possibility of either irregularities during pregnancy, or organic defects in the embryo, and/or the child, is at least theoretically tenable and even plausible.

But, in the course of practice, I have had some reason to regard the risk as negligible.

Not only the over-ripe and degenerating ovulum, but equally also the immature and prematurely extruded ovulum might be considered inapt for fertilization. But I do not think it probable that a really unripe Graafian follicle, *i.e.*, one that was not already in a strong state of tension, could be ruptured by the congestion, contractions and dynamic nervous sensations of an orgasm.

There may be two kinds of late ovulation. The first we have just considered; it may be considered an irregularity in the extrusion of the ovulum, but not in the ovarian action itself. The second is really retarded ovulation, retarded ovarian action; which, of course, also retards the progress of the ovulum towards its destiny. This retarded or irregular ovulation may be a constitutional peculiarity or idiosyncrasy of some special persons, or else it may be *occasional* and resulting from a slow development of ovarian action, or from a failure to experience the full sensations and effects of the orgasm.

This occasional retarded ovulation is far from rare. When it occurs the most apt time for fertilization is also correspondingly retarded, as must be obvious.

We will now trace the process of oögenesis, by which the female germ cell goes through division—*i.e.*, the first process of specialization—both before and after it meets the sperm—*i.e., before as well as after the exact moment of fertilization.* This first process of specialization is *an exact halving of the chromosomes, and the female chromosomes* carry the hereditary *genes* from the maternal side. *Thus, when it receives the invading sperm, the ovulum has only half the number of chromosomes it possessed when extruded from its* gonad, *or sex gland, the ovary.*

And a similar process takes place in the male germ cell, for the spermatazoon that penetrates and fructifies the ovulum contains only half the number of paternal chromosomes with which it left the male gonad, or sex gland, *i.e*, the testicle.

But when ovulum and sperm cell unite, the new cell formed by their merging again contains the *normal human number* of chromosomes; for this number varies in different species—*different animate creatures have different and characteristic arrangements of chromosomes.*

Therefore, each partner in the fertile coitus, *i.e.*, each parent of the emerging germ of new life, contributes exactly half the normal and typical number of chromosomes; and, as these chromosomes carry and transmit the *genes*, or hereditary qualities, the new human being may show qualities, physical and mental, inherited from (either and) both parents.

The extremely variable mechanism of heredity, by which some parental qualities are perpetuated and others suppressed in the offspring, is generally attributed to the halving of the chromosomes and to the thesis that the non-apparent qualities have been carried in those chromosomes suppressed in the first cell divisions, *i.e.*, before fertilization.

There follows a continuous cell division—after the union with the sperm cell—(the two original halves of the fertilized ovum splitting into four, eight, and so on) and the chromosomes also splitting and multiplying with the cells; thus the whole organism *of the future human being is saturated with qualities inherited from and shared by both parents.*

Further details may be found in Appendix V. of this Chapter.

In this cellular division, after the first division and fertilization, the infinitesimal divisions are smaller and smaller, the whole dimensions of the ovulum have not increased; though it has finally assumed the appearance of a mulberry or microscopic cluster of grapes. Graphic representations of these processes may be found on Plate VI., Fig. 3, Nos. 1 to 5; taken together with the preceding, from the work of *F. Kahn*, " Das Leben des Menschen " [48] (" Human Life "). The increase in bulk of the fertilized ovum only begins after extensive multiplication of cells. I shall not enter into a detailed account of embryonic development here, but may mention that the fertilized ovum draws its first nourishment from the lecithin which it contains and feeds on.

We can now better understand why the ovulum is so much

larger than the spermatazoon, although its essential elements (nuclear rods or chromosomes) do not take up much more space than the essential male chromosomes. The ovulum has to supply nourishment as well as life. But this nutritive substance can only be adequate for the ceaselessly multiplying chromatin (or chromosomes) for a very short time; and when this substance has been exhausted the fertilized ovulum has *normally* found its place of *mooring* or nesting in the mucous membrane of the uterus. Moreover, it has developed the apparatus necessary for attachment to and absorption of nourishment from the uterus.

Numerous tendrils, of infinite delicacy and minuteness, stretch themselves out from the portion of ovulum nearest the uterine wall. They touch the uterine membrane and forthwith they give out a fermenting fluid of albuminous type, which adheres to the membrane. The process is extraordinarily rapid; in a few hours after implantation has begun, " nidation " or " adhesion " has become complete, and the ovulum has become surrounded by and embedded in the uterine wall (*Graf Spee* [49]). The technical term for this stage of ovular development is the *embryo.*

From this moment the ovulum has become associated with the metabolic processes of the mother, and lives with her and through her. Normally, its development into a new human being is safe from the moment of adhesion.

On Plate V., No. 5, we have a representation of this implantation process, and of one of the freshest specimens of the human ovulum ever scientifically discovered and studied. It was described by *T. H. Bryce* and *J. H. Teacher*; and its age was estimated at between twelve and fourteen days. It had just reached the stage of implantation. Its total dimensions are between 1 and 2 mm., and the diameter of the central core from which a new human being might have evolved is $\frac{15}{100}$ (fifteen-hundredths) of a millimetre.

From the moment of implantation or indation, the ovum becomes associated with the maternal metabolism, and lives with and through the mother. And from the moment of implantation its development into a new human being is normally assured.

The major portion of the life of an ovulum before implantation is spent in the drift along the oviduct or tube, and only a small portion in the uterine cavity before adhesion is accomplished. The time required for these processes is estimated with a fair degree of unanimity by biologists. They allow about ten days for the passage through the tube and four days in the uterine cavity. Thus, adhesion would take place fourteen days after fertilization, or fusion of sperm and ovulum. And as, in the most favourable circumstances, this fusion follows ovulation within about twenty-four hours, we may, approximately, date implantation, or *conception*, at fifteen days after follicular rupture.

The two estimates of time limit concerned in this final calculation have been obtained by quite independent series of observations. But they entirely correspond. I maintain that an unfertilized ovulum remains " alive," *i.e.*, capable of fertilization, for fifteen days, and that a fertilized ovulum takes fifteen days from ovulation to adhesion, *i.e.*, the beginning of life within the womb.

Assuming that spontaneous ovulation occurs on the twelfth day after the onset of menstruation, the process of implantation or adhesion would, in " ideally normal " cases, occur on the twenty-seventh day, *i.e.*, just two days before the next period might be expected to fall due. This particular date coincides with the maximal growth of the uterine membrane, stimulated by the secretions of the Corpus Luteum, in preparation to receive and nourish the ovulum, and offering the best nourishment and shelter.

Even when this ideal regularity is disturbed, the result is generally impregnation, for when there is premature ovulation there is also correspondingly early development of the Corpus Luteum,* causing early appropriate changes in the uterine lining. Thus, when fertilization takes place immediately after ovulation—as will happen when ovulation has been hastened by vigorous coitus—the ovulum will mature and the uterus prepare its nest, and the only divergence from

* Details of the interaction of the ovulum, uterine membrane and Corpus Luteum are given in Appendix VI. of this Chapter.

the "norm" outlined above will be that the ovulum will enter the uterine cavity somewhat sooner.

What of ovulation which has been accelerated by other causes than coital stimulation and congestion? For there may be cases of feminine constitution in which ovulation is always somewhat premature: or there may have been an intense emotional stress and storm (whether of grief, fear, anger or joy) speeding up the central ovarian cycle, the complex rhythm "to which woman's life is attuned." * And coitus may occur some time after, so that Corpus Luteum and uterus have not, as it were, kept pace with fertilization. But even then, the ovulum, having been fertilized, does not pass out of the body and perish, and, as the ovulum remains in the genital tract, the Corpus Luteum continues in being, and its functional activity is even intensified, so that the uterine membrane does not degenerate after having attained its greatest proliferation, which otherwise occurs just before the menses. On the contrary, the uterine lining either remains at its maximum, or even continues the proliferation which makes the best couch or nest for implantation, when the belated ovulum leaves the tube and enters the uterus. We might even say that the uterine nest waits for the fertilized ovulum, just as the ovulum has waited for the fertilizing sperm cell, so that "nidation" takes place relatively late in spite of early ovulation.

If, on the other hand, the ovulum is sprayed forth from the follicle later than we assume to be "normal," *i.e.*, if ovulation takes place not on the twelfth day of the menstrual cycle, but, for instance, on the sixteenth or eighteenth, the conditions are altered. Fertilization may take place either through a coital act about this date or by a sperm which has entered the tube from a previous occasion and awaits the ovulum there. Fertilization is thus rapid; but "nidation," "adhesion" or implantation in the uterus occurs late; even so late as thirty or thirty-three days after ovulation (Case A). If there is both late ovulation and late, *i.e.*, subsequent

* "Ideal Marriage," p. 101, and also Chapter VI. of that work throughout.

coition, there is even greater retardation of the adhering process (Case B).

But, in such cases, too, an almost automatic adaptation takes place. Ovulation having occurred—even if later than normal—has been followed by the development of the Corpus Luteum. The ovulum, having been fertilized, the Corpus remains in function and increases its dynamic activity; the uterine membranes grow and proliferate, attain their full readiness to receive the ovulum, and do not degenerate and slough away in the menstrual flow, *for menstruation does does not occur, even if the fertilized ovulum has not yet reached the womb.* There is thus this difference from the *normal* process. Normally the cessation of menstruation means that the fertilized ovulum has embedded itself in the uterus. But in the cases which we are discussing there are two possibilities. In Case A adhesion occurs a few days after the date on which menstruation was due, but did not occur, and in Case B even later, so that it is possible that implantation may occur eight days or more after menstruation has been due, but failed to occur. Both of these phases of retarded ovulation are perfectly possible. There may be ovulation on the eighteenth day after the beginning of the previous menstruation,* one day elapsing before fertilization and a fortnight before the ovulum is ready to embed itself in the uterine lining—(there is no appreciable difference of opinion on this possibility among authorities). In Case B the ovulum may wait to be fertilized for an indefinite number of days, whether in the ruptured follicle, *i.e.*, while the Corpus Luteum is expanding (*R. Meyer* [47]), until it is ejected by a later coition, or in the tube. Even authorities who refuse to admit the latter possibility—chiefly perhaps *Grosser*,[51] whose embryological researches give great weight to his views—admit that coitus during any day or hour between two menstrual periods may lead to fertilization.†

In my opinion this conclusion (*i.e.*, the non-reliability of the safe period) and the recognition that adhesion or

* See *Fränkel*, quoted by *Sellheim*, (50) in his already quoted article, on p. 607.

† A study by *Knaus* has just appeared, and is more fully considered in Chapter XIII. He takes a different view.

implantation in the uterus may occur later than the date of—suppressed—menstruation, either owing to constitutional idiosyncrasy or chance, are the two chief results of the facts and considerations put forward in the preceding pages.

We must add that there may be cellular subdivisions of the ovulum, without normal fertilization. Among some of the less evolved creatures this may be effected by experiment. Thus, ova may be pricked or pierced. Or they may be placed in a hypertonic solution, that is, a liquid containing an abnormal proportion of salt. Or, finally, the ova may be brought into contact with certain chemicals. As a rule, ova artificially "activated" in this manner subdivide up to a certain point, after which they cease to function or survive.

But, in the case of some forms of life, such as echinoderms ("sea-urchins," etc.), or even so high in the scale as frogs, careful treatment may succeed in completing the genetic process.

There are, however, some significant differences here. The penetration of a spermatozoon of one species into the ovum of another, distinct, but not too remote (as, for instance, frogs and toads) *activates* the ovum, but only briefly, for cell division soon ceases. But, if the experimental method chosen is a mere mechanical prick, then the genetic process may be completed.

In the case of creatures very different and distantly related—as, for instance, starfish and roundworms—the sperm-cell penetrates the ovum and sets up fertilization, but the resulting offspring has the characteristics of the maternal side; for the spermatozoon has acted merely as a *mechanical* stimulus to development, and not proceeded to chemical fusion (as in normal circumstances) because its intrinsic nature and substance are utterly alien to those of the ovum, in which the sperm perishes. In the case previously cited the biochemical difference is not so great that the sperm is immediately destroyed. In fact, there is a sort of mutual attempt at adaptation and union, which fails and destroys both elements, owing to fundamental "incompatibility" of a biochemical type. And in how many cases of mutually

destructive or disastrous mating has there not been a biochemical incompatibility between partners higher in the evolutionary scale.

Only when there is sufficient affinity between the male and female elements in a fertilization is it possible for the invading sperm cell really to *fuse* with the ovulum and take a deep and permanent share in influencing the qualities of the joint product.

In certain rare cases an unfertilized ovulum which remains in the ovary may develop into a tumour, containing various portions of the anatomical human structure, such as bone, hair and teeth. But this is a morbid growth, an anomaly. A regular, normal product—not to mention anything so complex as a human child—*never* evolves out of an unfertilized ovulum.

APPENDICES TO CHAPTER IV

I. Chemical Affinities.

The following description is quoted from *F. Kahn's* biological work on "The Life of Man" ("Das Leben des Menschen"), Vol. I., pp. 212–213.

"Among the more primitive organisms we have been able to test and prove the existence of definite affinities or attractions towards certain substances. These affinities play a conspicuous rôle in the process of fertilization. In those forms of life, as in Volvox, the two germinal cells unite in the water. Both being of microscopic dimensions, it would be impossible for them to effect this union if some favourable 'medium' did not act as guide. It has been demonstrated, by tests on plants of the fern type, that the female seed, as it floats in the water, radiates a substance whose molecules attract the male seed and steer it towards the central sun of this chemical radiation. The chemical affinity of fern seed is malic acid; and the male seeds are so sensitive to this attraction that, if a solution of ·0,000,000,000,028 gramme of malic acid is placed in a microscopic preparation, all the male fern seeds are drawn to it within a very short time.

"*Rhumbler* devised a parallel test in order to demonstrate the almost reflex nature of these chemical affinities. He infused drops of castor oil into a vessel containing 80% of Vinum Ferri.

He then dropped a tube of oil of cloves * into the mixture: as soon as this happened the globules of castor oil moved towards the tube and pressed into it; the same mechanism as that by which the fern seed was attracted by the malic acid. Therefore, we conclude that the ovule of the human species radiates or exudes some extremely rarified chemical substance which has a sufficiently powerful affinity for spermatozoa to draw these venturous male germs 'upward and onward,' against the capillary current of the female genital tracts, to act as a compass and beacon to their voyage. Consider the actual spatial proportions and distances involved! A human spermatozoon is so minute that two millions of them could be accomodated in the head of an ordinary sized pin; it is propelled forward by extraordinarily rapid lashing movements of its tail, but, nevertheless, takes quite three minutes to cover a distance of one centimetre. How could this micro-torpedo find the tiny ovule which is hidden somewhere among the interstices of the mucous membrane of the genital tract—after having penetrated the estuaries of that tract, the secretions of the introitus, of the external and the internal os uteri, and the relatively gigantic cavern of the uterus—if there were no such chemical or electrical affinity to act as guide? *Schleich* has declared this process of conjugation to be 'as miraculous as the summoning plaint of Elsa (in "Lohengrin") which called her witness and champion across land and sea; and comparable to the nuptial invitation of a tendril of moss on Himalayan summits to a mosquito hovering over the waters of the Ganges.'

"We are not, as yet, in a position to say exactly what this mysterious chemical substance is, to isolate and name it. But we know that, not only the essential ovules but the whole tissues of the female genitalia, draw sperm-cells towards them. Let us suppose that a piece of tissue from the human heart or kidneys is placed in a chemical solution containing live spermatozoa; the swarming cells are quite indifferent to it. But, put a piece of uterine tissue in the solution and the spermatozoa rush towards it, through or over all obstacles, like beleaguering armies.

"It is a tenable hypothesis that this particular chemical substance is more intensely exuded by the upper and more inaccessible portions of the genital tract—oviduct and ovaries—and thus, the male cells are drawn forwards by a progressively increasing force to their destined goal.

"When the sperms have navigated the uterine cavity and reached the junctions of the oviducts, they are further helped by the capillary current, which passes from the mouths of these

* The distinctive constituent of oil of cloves is eugeno or caryophyllic acid.—(Tr.'s Note).

tubes towards the uterus, for the nature of spermatozoa is rheotropism, or the tendency to swim against the current; this rheotropism causes plants and shrubs to put forth branches upstream; and sends eels and salmon hundreds of miles from sea to source at spawning time. In the same way, spermatozoa drive on against the capillary current until they reach the wide bell mouth of the tube."

II. Mobility of Sperms within the Female Genital Tract.

In a case mentioned in *Busquet's* [52] Treatise, *Haussmann* demonstrated that spermatozoa had reached and entered the oviduct an hour and a half after coitus took place.

III. Vitality of Spermatozoa within the Female Genital Tract.

H. Sellheim [53] maintained that sperms are not capable of fertilizing the ovule after more than two days in the woman's genital tract. But *Pryll*, [54] *L. Fränkel* [55] and *Dührssen* [56] concur that the male cells may easily remain functional for more than a week. *J. Bronte Gatenby* [57] concludes that they may be active for a fortnight. We know this is the case in some mammalian species, for instance, in *bats*, who come together in the autumn, hibernate over the winter, and have their processes of ovulation and fertilization in the spring. Here the spermatozoa wait, hidden in the genital tract, not for weeks, but months (*Brehm* [58]).

Marion Sims proved the presence of mobile sperms in the cervical portion of the uterus eight days after coitus. *Percy*, *Haussmann*, *Bossi* and *Dührssen* have published results of tests which proved that sperms were detectable between five days and twenty-two days (three weeks) after coitus. (For particulars, see the above-mentioned work by *Busquet.*[52])

I see no reason to abandon the conclusions based on positive observations, and supported by similar results in sub-human species, in order to accept a far from incontestable, theoretical and negative opinion on the matter in question.

IV. How does the Ovule make its way from Ovarian Follicle to Tube?

The distance from the follicle to the tube is considerable in comparison to the tiny dimensions of the ovule. There has as yet been no satisfactory explanation of the process whereby this distance is safely traversed. I should be strongly inclined to suggest chemical affinity in this case as well, although the extremely mobile spermatozoon is a much easier subject for such influence than the ovule, which drifts along the capillary current instead of forging ahead. (Cf. Appendix I.) It is possible that

the *Fimbria Ovarica*, the tiny edge or rim connecting the mouth of the tube with the lateral extremity of the oval ovary (see Plates III., Fig. 1, and V.) has an important part to play here, although it is difficult to realize how the little groove can assist the passage of an ovule which has been extruded from a follicle on the medial surface, or vertical extremity, of the ovary. Formerly it was believed * that the fringed mouth of the tube approached and gripped the ovary and captured the extruding ovule by suction. This hypothesis is renewed by some medical writers, who point out the probability that orgastic contractions of the genitalia are shared by the tubes, and that coitus can provoke ovulation. May be. But the sheer anatomical difficulty remains. An ovule extended from the medial extremity of an ovary can never pass directly into the duct, but must always traverse a relatively enormous intervening space. (See Plates III. and V.)

All attempts to explain or visualize this complicated process are faced by observed and experienced facts ; namely, that there may be *quite a fair prospect of fertilization and pregnancy, even when the oviduct on one side and the ovary on the other have been removed by surgical operations.* We may form some approximate idea of how the tiny ovule passes from its follicle into the mouth of the adjacent tube. But how does this microscopic speck of protoplasm (without the immensely powerful locomotor organ of the spermatozoon) find its way across the abdominal cavity from one side to the other, through the intricate tangle of the intestines, and then, after this mysterious pilgrimage, how does it reach an organ where it can be normally fertilized and implanted? No. All our explanations and suggestions are indeed inadequate before this miracle of nature ; we must content ourselves, for the present, at any rate, with recognizing it and recording it, with amazement and awe.

But we may safely draw this conclusion: if, as has been proved, the ovule can cross the abdominal cavity, enter the opposite tube, become fertilized and develop in a normal pregnancy, it must, obviously, retain its functional vitality for a comparatively long time. It may even cross the abdominal cavity when both tubes are intact and active ! There have been cases of ectopic pregnancy leading to necessary operative interference, in which the ovule had adhered in the tube of one side, but its *Corpus Luteum* was present on the opposite ovary !

V. Oögenesis and Spermatogenesis.

The main stages of development in the maturation of both egg-cells and sperm-cells are graphically represented in *J.*

* See Professor *August Forel's* book, " The Sexual Question," (59) Illustration No. 19. (William Heinemann, Medical Books, Ltd., London.)

Meisenheimer's Plates, published in his work on " Die Grundlagen der Vererbungslehre " [60] (" The Bases of Heredity ").

We will discuss the sperm-cell first, as its evolution is, in certain respects, the simpler of the two. Let us bear in mind that the original sperm-cell, or male gamete, is not the same thing as its mature form, the spermatozoon, which has differentiated parts, namely, a head and a propeller or tail. We will consider the male gamete of *Ascaris Megalocephala,* which has a normal or typical structure of four chromosomes, or nuclear rods. The human norm is far greater, but the principle on which the process of maturation proceeds is the same for men as for the humbler creatures, and we may, therefore, take the smaller number of chromosomes for our typical example.

These four chromosomes subdivide (or proliferate) in such a manner as to form two groups of four each; and these are arranged in a special *pattern* among themselves, and in a special *position* relative to their environment. These are represented on Plate VII., Fig. 1, No. 1; the eight subdivisions are in the middle of a spool-shaped figure, whose extremities, or poles, are formed by two very minute, strongly-luminous points, each of which is the centre of a crown of rays. The further processes are depicted in Nos. 1 to 3 of the same series; but the essential point is that out of each group of four particles of chromatin, two gravitate towards one end of the spool and two towards the other; this means that two of the original chromosomes pass into the cells of each of the first subdivisions of the original cell. In No. 3 these cells are depicted. In No. 2, a further subdivision, or ' segmentation,' is heralded, for each centrosome is halving itself again. The centrosomes are the rayed, or striated, points or twin suns at the extremities of the spool. The further evolution is shown in Nos. 4 and 5.

Finally, the original gamete with the four chromosomes, has developed into four sperm-cells, each with two chromosomes, that is with *half* the typical norm for it species, so that the full norm will be made up *on merging with the female cell, which also has only two chromosomes.* The four sperm-cells which are formed from the original gamete are all of equal size and appearance and equally potent to fertilize the ovule, but they must first assume the shape characteristic of the spermatozoon. The actual nucleus, containing the chromosomes, becomes the head of the spermatozoon and the remaining cellular substance forms the middle portion and the tail.

When the female gamete or ovule emerges from the follicle, the processes it undergoes are the same as in the case of the male gamete, and are depicted on Fig. 2, Plate VII. (which has also been taken from *Meisenheimer's* work). Here, too, the typical original number of chromosomes, namely, four, are exactly

halved in the ovule when it is ready for fertilization. The essential difference between the two lines of evolution is that the original male gamete furnishes four spermatozoa, each of which is able to fertilize an ovule, while the female gamete forms only one ovule, which is able to be fertilized; the remaining cellular substance is absorbed and disappears.

In Fig. 2, Nos. 2, 3—the ovule—which has already gone through its first segmentation—has received the entering spermatozoon; thus, further *segmentation* coincides with the actual process of *fertilization*. (I have pointed out already in the preceding chapter that they are generally concurrent.) The impact of the spermatozoon quickens the proliferating cells and fertilization, strictly speaking, takes place *within the ovule*. (See No. Fig. 2, Plate VII.)

The two processes of Spermatogenesis and Oögenesis are represented, parallel to one another, in Figs. 4 and 5 of Plate VI.

Actual Process of Cell-conjugation or Fertilization.

We shall now give some account of the actual merging, or joining, of the male and female elements without reference to the actual subdivision or proliferation within each separate cell—which may have taken place before the spermatozoon penetrates the ovule.

This penetration is executed by the male cell, head on, like a torpedo, ram or sword. It pierces the outer surface of the ovule. But quite as soon as this happens, and probably while the spermatozoon is approaching its goal, the female cell stretches out towards its advance and forms a microscopic protuberance, technically known as a "receptive cone." The spermatozoon rushes at and into the receptive cone, twisting and boring forward towards the essential (gametic) nucleus. The propeller-tail of the spermatozoon vanishes, but head and middle are fused with the ovule. Only one spermatozoon meets and invades the ovule, which immediately becomes impenetrable to all the others.

This is the external process of cell-conjugation; the internal process continues within the ovule.

The head of the spermatozoon (which contains the chromosomes) presses forward into the nutrient portion or ovalbumin of the ovule, dilates and fills itself with liquid and becomes a tiny vesicle which is known as the spermatic nucleus and which consists mainly of chromatin. It forms the typical structure of the centrosomes (see above), whose rays spread through the ovular globe till they touch the female gamete or nucleus, which is not in its centre, but somewhat to one side.

The centrosome subdivides into two rayed points, which move to each side of the female nucleus and become the two poles

of the first spool-shaped structure. Then the daughter chromosomes gravitate, half from the male cell and half from the female, each to their own extremity, from either side. Each of the two groups form the nucleus for the first segmentation of the fertilized ovule.

On Plate VII., Fig. 3, Nos. 1–8, we have endeavoured to represent the whole process.

As a final comment on the essential nature of this genesis of life, I quote a passage from the work of *G. C. Heringa* and *A. H. Lohr* [61] :—

" Is it not easy to understand why we, who study the formative and creative forces of nature, should chose the ovule and its functional destiny, in preference to other objects ? The active mobile spermatozoon, which moves forward like one of the flagellate unicellular infusoria, has fascinated students and savants for centuries and we have known for a long time that these sperms are lured forward towards the ovule by means of chemical affinity. But we have now attained a wider and newer knowledge ; we know that the ovule is not content with radiating subtle streams towards the sperms, but that it stretches itself towards them, offers itself in the receptive cone ! *The ovule is not a passive object in which fertilization takes place ;* it shares in that merging and that subsequent creation. It is a living organism, with its own urges, needs, sensations. In the instant of penetration, the globule vibrates and quivers ; its apparently inert protoplasm—shot through and through with a chromatin—becomes a world in travail. A radiant crown, like the solar corona, surrounds the spermatic nucleus ; and the new nucleus that forms itself from the two gametes, until the whole protoplasm is rayed throughout. Then, as further segmentation continues, the tiny globule moves and writhes as though in parturition, until suddenly, lo ! the cell gives birth ; it halves itself and becomes double ; the first differentiation has begun."

VI. The Determining Influence of the Living Ovule.

The account given in Chapter IV. is based on the teaching of *Robert Meyer*, who took as his foundation the *determining influence of the ovule on the development and activity of the ovarian Corpus Luteum ; while the Corpus Luteum, in its turn, activated the epithelial cells of the uterine lining, in readiness to receive and " nest " the fertilized ovule.* If the ovule passes unfertilized out of the genital tract, the Corpus Luteum ceases its activity, and this is the signal for *menstruation, i.e.*, the shedding or sloughing of the superfluous epithelial cells. The Corpus Luteum then rapidly disperses and disappears. But, if the ovule is fertilized and becomes actively functional, the Corpus Luteum remains ; men-

struation does not take place, the uterine epithelial cells are not shed, but proliferate and form the " nest " for the implantation of the fertilized ovule.

In Chapter VI. of " Ideal Marriage " * I pointed out that all this was far more intricate and complex than could be shown in detail in a treatise on erotic physiology and technique—although both the luteal and ovarian functions were fully described. †

I admitted that there were many factors in operation, some of which we knew—at least partially—but of others we had no knowledge at all. It is probably well again to stress this extreme complexity of the human organism.

We must bear in mind the complex function of the ovary ; it has not only the luteal secretion, but another of rather similar character. And, indeed, it has become probable that one should say not " *rather similar* " but " *the same,*" after the experimental researches of *B. Zondek* and *S. Aschheim* as well as *Laqueur* and his helpers.(61A)

They have proved the presence of ovarian hormones in the ruptured lining of the Graafian follicle and in the liquid which is sprayed out with the extruded ovule. *Zondek* and *Aschheim* have established a strong probability that this substance is the same as that manufactured by the corpus luteum. In his address before the Gynecological and Obstetric Society of Berlin on 22nd January, 1926, *Zondek* (62) said : " When the follicle ruptures, it sprays the hormone into the abdominal cavity, where it is absorbed lymphogenically ‡ into the organism. Simultaneously, there is a direct hæmatogenic § supply through the lining of the ' yellow body ' formed immediately after ovulation." I venture to conclude that the woman's organism must be *very swiftly saturated with the specific hormone,* for the peritoneal membrane must easily absorb the liquid from the bursting follicle, and this saturation is continued as the corpus luteum grows, with peculiar rapidity and intensity. This double ovarian function explains the rhythmic *crescendo* (in mammary glands, blood vessels, bodily temperature, uterus) more adequately than the efflorescence of the corpus luteum alone. ‖

Another important factor already touched on ¶ is the part played by the *hypophysis* or *pituitary gland,* as an intermediary

* See pp. 86–114, *op. cit.*, for a detailed description of the reproductive and vital rhythms of the adult woman, including original observations.

† " The ovaries are organs with a twofold secretion ; external (ova) and internal. The external secretion is periodic and recurrent. The internal is partly recurrent, but also, to some extent, continuous," " Ideal Marriage," p. 85. See also pp. 82–84, and pp. 113–114, *op. cit.*

‡ Through the lymph channels.

§ Through the blood channels.

‖ See " Ideal Marriage," Chapter VI. and Plate VI.

¶ *Op. cit.*, p. 114.

between ovule and corpus luteum. I have referred to the work of *J. Hofbauer* (63) who makes clear that the ovaries are influenced by the thyroid, pituitary and pineal glands,* and added that their interplay of forces is extraordinarily involved.

Here, too, *Zondek* and *Aschheim* have shed light. According to them the frontal lobe of the pituitary gland, the ovule, and the endocrine (or hormone) of the ovaries, form a *functional unity* in *the service of reproduction.* Minute dosage with the endocrine of the pituitary lobe causes rapid development of the ovaries. Moreover, pregnant women excrete through the kidneys—that is, in their urine—an extremely minute quantity of pituitary hormone (which, however, is larger than the aforesaid dosage) and which, if injected into female mice, causes such an unmistakable swelling and change of their ovaries that doubtful cases of pregnancy may be absolutely demonstrated (or disproved) by this test at a very early stage. Research by *Long* and *Evans* showed that permanent dosage with the hormone of the frontal lobe (of the pituitary) caused premature ripening of the ovarian follicle and *the formation of corpora lutea, without follicular rupture and release of the ovule.*

However, although these various independent investigations have shown that absorption of hypophysis extracts can activate the ovaries and cause the formation of corpora lutea, *without* ovulation, there is surely no reason to doubt that, under normal circumstances, the living ovule is the *primum movens*, the mainspring of the mechanism that releases the endocrine activity of the hypophysis and thereby sets in motion the *corpus luteum.*

Zondek and *Aschheim* are in agreement that the dispersal of the corpus luteum is the result of the dissolution and disappearance of the unfertilized ovule, as they made clear in their joint report on " the Function of the Ovaries " at the First Congress for Sexual Research (Berlin, 1926).†

I am therefore of opinion that a misunderstanding is involved in the comments of those writers who accuse *Zondek* and *Aschheim* of detracting from the fundamental importance of the ovule. *The ovule is the mainspring of the whole series of events and,*

* *E. Leschke*, on the occasion of the first International Congress for Sexual Research (Berlin, 1926), gave an important lecture on the wide and deep significance of the pineal gland in sexual matters.

† *Aschheim* again stressed the fact, established after unbiassed tests, that, " before the formation of the corpus luteum (*i.e.*, before the endocrine saturation through the lutein cells of the granulosa, whose function is beyond doubt)—the hormone was demonstrably present in the theca cells of the ripe follicle." " The normal function of the corpus luteum, *i.e.*, of the ' yellow body,' which consists of granulated lutein cells and appears after follicular rupture—*ceases as soon as the ovule perishes and menstruation recurs.*" (65) The first sentence deals with the problem on which I have already touched ; the second, with the " key position " of the ripe ovule.

although the mechanism is much more complex than we supposed, there is good reason for holding fast to our previous theory of cause and effect in these matters. *

I would refer my medical readers, who may be specially interested in the influence of the hypophysis on the endocrines of the sex glands, to the work of *Steinach* and *Kun* [65A] on the " evolutionary mechanism and significance of the hypophysis as activator of the gonads " (" Die entwicklungsmechanische Bedeutung der Hypophyse, als Aktivator der Keimdrüsen ").

They give full particulars of experimental tests on *male animals* in which they obtained results essentially corresponding to those of *Zondek* and *Aschheim* with *female animals.*

The difference appears to be that the activating influence of the hypophysis is slightly more pronounced in the male ; the testes are more dependent thereon than the ovaries.

However, the hypophysis appears to exert no sexual influence on castrated males ; therefore, *Kun* and *Steinach* consider that it acts as a dynamo or trigger to release the endocrines of the gonads, but not as the " general and supreme sexual hormone, *par excellence.*"

Zondek and *Aschheim* differ here. They both regard and term the hormone of the frontal pituitary as the supreme sexual hormone, common to both male and female. But, as they have found that this hormone has *no effect in gelded males and splayed females, they assume that it can only operate by way of the gonads.*

They have published a joint review of their results in 1928.[65B] And *Zondek* has given further details of the utmost interest in his essay on " Biologie und Klinik des Hypophysenvorderlappen-hormones (Prolan)." [65C]

But even this synopsis and this essay do not disprove the possibility that, in the female organism the ovule normally acts as a dynamo—as " primum movens "—*by releasing the pituitary activity which causes the formation of the corpus luteum.* This view gains support from the fact that fertilization of the ovule—or rather perhaps, its adhesion to the uterine wall—*causes such an immediate and immense flow of hormonic secretion from the frontal lobe, that its presence is probable by biological experiment, eight days after* menstruation would have been due ! (See above, the account of the injections into mice, resulting in ovarian dilation and congestion—*L. Kraul* and *J. Rippel*).[66A]

* Experiments, such as those of *Westman*, who removed the ovaries of doe rabbits who had just been covered by the bucks—cannot affect our conclusions. The experiments were too few in number and their exact method and results admit of other interpretation.[66]

CHAPTER V

THE GENERAL AND COITAL PROMOTION OF PREGNANCY

THE following factors determine whether normally executed coitus between a normal man and a normal woman will lead to conception and pregnancy:

(1) General bodily and psychic condition of both partners, (2) functional fitness of the genital organs, (3) date of coitus in the monthly cycle, (4) preparation or prelude to intercourse, (5) method of intercourse and actual technique of the final culmination.

These are obviously not, by any means, isolated factors, but interact and influence each other. But it will be advisable to consider them, so far as possible, separately, in the course of our discussion.

Moreover, the concept of "normality" must not be too rigidly narrow. *No human individuals are, in every respect, "normal."* But the term is here used to designate persons and actions which are free from morbid anomalies. In the next chapters we shall consider the best procedure under *abnormal* conditions, and the prospects of improving or removing such abnormalities.

In most cases there is great probability that genital intercourse between two healthy persons will lead to pregnancy. But this probability, though great, varies appreciably, according to the individual anatomical structure of both partners, and according to both the actual technique of performing the act and its attendant circumstances. It follows, not infrequently, that a normal married couple who both desire parenthood, do not achieve their wish because they do not understand the necessary contributory factors to its fulfilment—or do not know how to combine these factors.

Far too little attention is commonly paid to the general condition of both partners; their habits of life, the quantity

and quality of the food they eat, their occupation and the psychic atmosphere of each individual act. We must admit, however, that knowledge of many of these factors is extremely recent, and that much research and collation of results will be necessary before we can be sure of the exact sequence of causes and effects.

This is especially true of, (*a*) daily habits of life, and (*b*) nutrition. Experimental results, so far, are divergent. But we may safely affirm that both a one-sided, restricted, undiversified habit (*a*) of living, and (*b*) of eating—are unfavourable to reproduction. Both may so impair potential fertility that individuals are no longer able to engender or to conceive. And where *both* partners are subject to such habitual or nutritional *de-vitalization, even to a relatively slight degree, their union may become sterile.*

As regards habits of life, examples are equally pronounced among persons who devote themselves to continuous and strenuous brainwork, and those who concentrate on the extreme development of various mechanical activities ; the diminished fertility of *savants* is as well known as the same phenomenon among athletes.

This diminished reproductive power is easily traceable in the male organism. It may be readily proved by accounts of their quantitative sexual activity and by the microscopic examination of their seminal fluid. In such pronounced cases as those now under consideration, we find a comparatively small number of spermatozoä whose motility ceases much sooner than in normal cases, and this means that they are unduly sensitive to unfavourable environment. And we have definite proofs that this insufficient production and quality of spermatozoä has been due to wrong or, rather, one-sided ways of living, for, when such ways of living have been changed, there has been a beneficial result, proved by greater quantity and motility of spermatozoä, more frequent sexual desire and satisfaction, and often most unquestionably by successful attempts at impregnation.

In women, habitual damage to potential fertility cannot be demonstrated under the microscope (unless, of course, the

ovarian tissue is partially or totally removed !) And the actual amount of sexual intercourse is less significant, as women are capable of experiencing the sexual act passively, as well as participating actively in its sensations and reactions. Moreover, such (very desirable) active participation depends largely, not only on her bodily and psychic individuality, but also on her partner's potency and artistry. Nevertheless, in her case also, the effects of a changed habit of living are often amazing—provided the initial damage has not gone too deep.

Habitual or occupational injury to women's power of reproduction takes two very different forms. There is the ceaseless, sleepless or insufficiently sleeping, largely nocturnal pursuit of amusement, which combines immoderate dancing, too little food, too much alcoholic or other stimulants (cocktails, for instance), immoderate smoking, and often excessive venery as well. On the other hand, there is the much larger number of women who are exposed to subtle internal injuries by the conditions under which they earn their daily bread, or by actual overwork.

It would take far too long a digression from the main theme of this book to attempt an explanation of *why* or *how* the fertility of many women is impaired and diminished by industrial work. It would be necessary to quote freely from the work of *Max Hirsch*, who was and still is our pioneer, both in gynecology and the social side of obstetrics and maternity-welfare work. I would refer interested inquirers to those of his publications listed under bibliographical reference No. (67) * and for less detailed information I would summarize the gist of his results in the following brief quotation :—

" From these numerous statistics, the conclusion results that the feminine organism is far more susceptible to occupational damages and diseases than the masculine. And that the triple functional activity of work for a livelihood, sexual development and reproduction, mean a strain for women which must inevitably cause some degree of injury." (71)

* See also bibliographical references (68—70).

If we add that the number of modern women who suffer both from expensive and busy idleness and from chronic occupational—chiefly industrial—overwork, is not small, we have said enough and need only add that when these deleterious influences cease—especially if they have not been too acute and, above all, too prolonged—fertility again becomes normal.

A long furlough, a real holiday, and a wholesome simple way of life will do wonders, just as an overworked business or professional man often attains the desired effect if he arranges his daily programme with more wisdom and common sense—with fewer hours of work and with a certain definite number of hours for sport and moderate exercise, swimming, rowing, games, and abstention from the trivial round of " social duties " and distractions.*

A journey may have remarkably good effects. These may be more fully considered later, but, for the moment, we may recognize the *psychic* effect of a complete change of scene and daily occupation, as well as of altered climate and dietary—in enlivening and reinvigorating the whole organism.

The mention of a journey may suggest a supplementary partner to some of my readers ! Nor will I deny that this third party co-operation can both regularly raise the illegitimate birth rate and, indirectly, promote marital fertility, But I do not refer to such expedients, but to the beneficial psychic and emotional influence of a journey, with its change of scene, whether brief or prolonged and to the change which such an influence may initiate.

For psychic and emotional states have no small part in determining marital fertility. The thorough exploration of this theme and formulation of any guiding principles would need a long and special monograph. But its most important

* Such " social duties and distractions " are by no means restricted to the leisured and governing classes to-day. Every class tends to make amusement into a burden. On the other hand, real recreation of body and mind is no longer the exclusive privilege of one class. Nevertheless, the peculiar type of diminished reproductive power due to intensive and continuous brain work in men is typical of specialized groups and sections of the community.

constituent is Love—Love which indescribably alters and influences the natures of men and women, making them desire complete self-abandonment, union and communion, through all the fibres of their bodies and all the faculties of their minds and souls. For a long time we medical men have given no place or heed to this purely psychic force in our diagnoses and prescriptions. Yet its significance is surely great, as may be proved, by many startling instances in the lives of the higher species of animals. We cannot dogmatize here about causes and effects. But, since we have begun to realize the interaction of mind and body and to admit that there are other than sensory channels of communication here, the possibility of psychophysical phenomena no longer seems inadmissible to us, and we are beginning, more and more, to endeavour to remove them from the fairyland of sentimental fantasy—to which we had banished them—and to treat them as subjects for serious inquiry, and factors of considerable power in certain cases.

To return to the advisability of a certain amount of travel in promoting fertility, we may summarize conclusions thus: the relative infertility of an individual, or still more of a special pair, may be caused by psychic disturbances, inhibitions, incompatibilities. These may, in many cases, be removed by the change of scene and habits caused by travel; and the relative sterility may thus also be surmounted. The consulting physician and psychologist has the—far from easy—duty of deciding, after the most careful consideration, whether he should recommend the marriage partners to undertake this "cure" together or to part for a brief while.

Psychotherapeutics, in the strict sense of the term, may often be of great service in cases of severe psychic disturbance. But these are hardly relevant to the subject-matter of our present chapter.

Let us now consider *diet* as a factor in promoting fertility. Recent research here has had illuminating results!

We know now, quite definitely, that natural reproductive

power may be damaged or entirely destroyed by *underfeeding as well as by the reverse.* Among the Russian masses during the years of famine—1921, 1922, 1923—*W. H. Stefko* [67] had ample opportunity to observe the effects of semi-starvation on the gonads of both men and women. He was able to make microscopic examinations which proved that both in ovaries and testicles the *generative* cells shrivel and are replaced by connective tissue.*

Another anatomist, *H. Stieve* [67], established the contrary and complementary series of facts through controlling and testing the diet of geese. A goose who is being specially fattened does not begin to lay eggs when those who are left on ordinary diet have become functional; and a goose who is already a layer ceases to be so when she is fattened. The bird herself grows in bulk and weight, but her ovaries shrink and the follicular products degenerate and are re-absorbed into the system. Females of other species show like symptoms, and the results are the same *mutatis mutandis* in the males. A gander in full sexual activity ceases to make sperm cells a few days after he is put on special fattening diet and after from four to six weeks he is no longer capable of engendering.

There is, however, an important biological difference between men and women in this respect. Unless there have been lesions due to violence or certain diseases, the male gonads are able to form and secrete spermatozoä afresh throughout life, whereas the ovaries receive their whole store of ovales—or at least of ripe cells—at birth. If some deleterious influence not only damages the extremely sensitive ripe ovales, but destroys the potential cells in the ovarian tissue, there is no possibility of replacing this vital treasure, and fertility is irretrievably lost. Not only in these cases, but in those where there has been injury to the epithelial membranes of the gonads, feminine fertility is more susceptible and fragile than masculine *potentia generandi*, and, if it is to be preserved, must be guarded with special care.

* Not, be it remembered, by the interstitial cells which are associated with endocrine secretion !—(Tr.'s Note.)

Diet is important not only quantitatively, but qualitatively as well. Monotonous and restricted diet may be very unfavourable, as we know both by human experience and animal experiment. There have been many biological tests of late, in which main constituents of food have been either eliminated or increased in the diet of both male and female animals. The majority have been carried out in America, but there are also significant results from Europe and Japan.[67]

There is not as yet, however, unanimity on specific details among experts. One savant considers Vitamine E * of crucial importance for fertility, another swears by Vitamine D, and by a substance specially connected with reproduction and designated by the letter F. But these matters of detail are insignificant to our main argument; for all specialists on vitamines agree that reproductive power in both men and women is promoted by the assimilation of *all* the chemical substances necessary to build up *all* bodily organs—albumins, fats, carbohydrates, minerals—especially lime and phosphorus—salts and vitamines; and that it should be diversified and contain a certain proportion of greenstuffs and raw fruit. Both unboiled milk (though we must guard against tubercular and enteric infections), raw meat (but only *clean and wholesome meat*), and, of course, vegetables and fruit have special value. The richest vitamine contents among vegetable foods are those of lettuces, leeks and onions, oranges and tomatoes.

Among animal products, eggs are the most generally sustaining,† especially in their yolks. And this is really natural, for the yolk of a hen's egg is not only the *essential portion, i.e.*, the embryo from which another avian creature

* Vitamines or Completines are vital substances, chemical compounds which are necessary ingredients in food if health and vigour are to be retained. They exist apart from ordinary foodstuffs such as milk, cereals, eggs, meat, fruit, etc. There is much reason for believing that there are several different substances of this kind, with different effects. They are present in extremely minute quantities, but must not be lacking if health is to be preserved. They are generally present in raw food: cooking destroys their efficacy. They are distinguished by the letters A, B, etc.

† And genitally stimulating as well. See the classifications and recommendations of foodstuffs and drinks, as aids or sedatives to erotic activity, on pp. 275–280 of "Ideal Marriage," Chapter XV.—(Tr.'s Note.)

would normally develop ; it is also a concentrated substance which affects the gonads of both women and men.

A substance similarly rich in reproductive vitamines is found in the seeds of plants, especially in the kernels of wheat,* as has been proved by experimental tests. The starch which forms by far the bulkiest portion of the wheat ear, is not stimulating in this sense, but the tiny core of the wheat contains the same concentrated elixir as yolk of egg.

As this nutrient substance is present in brown meal and also in malt bread, but not in the fine meal of white loaves and rolls, it may readily be perceived that harm is done to human vigour and organic activity by too artificial a type of diet. It is not necessary to regard this warning as a championship *à l'outrance* of nut-fooders and nature-fooders. The extremes in this direction suffer from a monotony and one-sided effect which are particularly inadvisable ; they bring sectarianism into food.

The famous Viennese doctor and humorist who declared that : " One shouldn't stop healthy people's mouths, but let them speak and eat as the fancy takes them " was right about eating, at least. *Really healthy people* will spontaneously and naturally choose and relish the foods their bodies need ; and some greenstuff and raw vegetables and nuts will be among these foods.

But we should be on guard lest health be baulked by prejudice, ignorance, habit and sheer laziness ! I know several families who live principally on tinned food in order to save cooking !

Undoubtedly diet affects potential fertility. Both the couples who want children and the medical practitioners from whom they seek advice, would do well to take this into consideration. Marriages have been crowned by desired offspring merely through the change from an unreasonable habit of life to one of healthy common sense, or through the change from a devitalized and restricted diet to one full of variety and vitamines.

* The resemblances between vitamines and hormones are striking and suggestive. See Appendix I. of this Chapter, where there is a relevant quotation from a work by *E. Vogt.* (67)

A further main factor in promoting fertility is the special functional condition of the genital organs, *i.e.*, their " fitness." And in both partners genital " fitness " depends largely on general health.

Nevertheless, the recent activities or inactivities of this special function are also important ; they may decisively influence the actual occasion of coitus, and this may be disastrous, both when the organs have been previously totally inactive and when they have been used without stint.

Let us first consider *prolonged sexual abstention*, such as may have preceded the late marriage of a woman who is still a virgin in her middle thirties. Very often the longed-for baby is never conceived. Even when abstinence has been *reproductive* and not *sexual*, *i.e.*, when contraceptive methods have been employed for years, there may be difficulty in effecting impregnation when it is desired and intended. And this is not only because certain contraceptives may do harm, but because the prolonged repression of a function weakens the capacity to exercise it.

Men, too, are liable to unpleasant surprise if, after having adapted their genital organs to passivity by years of abstinence, they suddenly expect complete normal fulfilment and enjoyment. The sensitive organs often refuse to meet the unaccustomed strain.

Excessive venery may also impair or " hold up " reproductive power, though generally only for a short time. In men, sexual excess generally takes the form of too rapid and frequent ejaculation, or attempts at ejaculation. Both the quantity and the motility of the spermatic products diminish very quickly under such overstrain and, if it is often repeated, the whole structure has no time to recuperate. This means that very frequent intercourse lessens—instead of increasing —the chance of impregnation. And, of course, the autoerotic or ipsatory habits which many men refuse to relinquish after marriage may contribute their special drain on the system, for the essential nature of self-relief is its tendency to immoderate repetition.

The ill-effects of constant usage of the sexual organs on potential motherhood in women are notorious, and commemorated in many crude and homely proverbs, such as, "No grass grows on a well-trodden way." There are several factors here. In some cases there is, doubtless, a sort of immunization to the natural action of the spermatozoä because they have been absorbed in excessive quantities into the mucous membranes of the genital tract. (We shall revert to this subject later.) In other cases, ovulation may be disturbed by sexual excitement which is not only frequent, but often slightly abnormal in its precise "mechanism." Similarly, the intrauterine membrane may be congested and rendered inapt to receive and "nest" a fertilized ovum; and, finally, it is not impossible that an ovum which has not only been fertilized, but recently adhered to the uterus, may be loosened and extruded through the frequent and vehement orgasmic contractions of many coital acts.

Theoretically, and in practice, we know that excessively frequent sexual intercourse even, if performed in a normal manner, may prevent conception or cause very early termination of pregnancy. How much more likely then is it that coitus interruptus and habitual masturbation may cause chronic congestion and unhinge the nervous mechanisms of the act. *But, even so, they do not always prevent undesired pregnancy!* We know of cases where habitual ipsation had concentrated the whole genital susceptibility in the clitoris and where, therefore, satisfactory normal coitus was impossible; and yet these women could and *did*—become pregnant!

Students of the art of living must draw their own conclusions. The main gist of our remarks is that, in the cases where pregnancy is desired but not easily obtained, it would be well not to repeat the sexual act too frequently, at short intervals, but to concentrate in one communion—or a few—after a period of complete repose and appropriate nourishment and refreshment. But this quiescent season must not be *too long.*

What date or dates in the monthly cycle of the woman

should be chosen for coitus which is desired to lead to pregnancy? One of the days immediately before the follicular rupture, or the exact day of ovulation. This means *from the tenth to the thirteenth day after the onset of the last menstrual period.* If this prescription does not result in pregnancy—after having been followed for an adequate length of time, of course!—it is advisable to try an early date in the lunar month; this is based on the assumption that early ovulation is usual in the woman in question, or, that ovulation may be accelerated. (In these suggestions it is, of course, assumed that there are no morbid conditions in either partner.) If the earlier date gives no desired result, then a later date should be chosen (*i.e.*, a date after the middle of the inter-menstrual period). It may be occasionally possible to judge whether ovulation has occurred by various general and local symptoms * and to act according to this knowledge.

The directions and suggestions offered here have a strong confirmation in the age-long and celebrated fecundity of the Hebrew race. According to both *Talmud* and *Mischna*, sexual intercourse may only be resumed twelve days after the onset of the last menstrual period. The results of these ritual observances among Orthodox Jews are unmistakable, and we have also the proof from the other side: namely, that strict ritual observance leads to infertility in cases of *constitutional premature ovulation, i.e.*, by the twelfth day, the favourable moment has passed. In the "Archiv für Frauenkunde" (Gynecological Archives), Vol. XII., *Max Flesch* † gives a striking example, cited in Appendix I. of this chapter.

I am of opinion that both prelude and love-play ‡ have considerable influence over the *possibility* of impregnation. Of course, they are not *indispensable;* the drab commonplace of the married life of many human beings who have long forgotten or have never known what *wooing* can be, but who, nevertheless, produce offspring in plenty, proves

* See Chapter VI. of "Ideal Marriage."

† *Flesch* explains the case in question differently; but this is irrelevant to our present theme.

‡ See "Ideal Marriage," Chapter VIII., pp. 143–171.

that ! Nevertheless, there are probably many women, functionally " fit " and apt for conception, whose fulfilment depends on the refinements and delights of adequate *preparation*.

This may also be important for men whose potency is not of the most pronounced type. They also may need a fairly long and gradual " tuning up," whether for the accumulation of semen or for the attainment of full erection.

We will here consider principally the potential Mother. Obviously, the psychic exaltation caused by skilled wooing and by her own tenderness and joy, must deflect an increased flow of blood to the genitalia. We may safely conclude, both by observation of subhuman life and by analogy, that this local congestion means a swelling and tension of the ovaries, which makes the follicle readier for rupture. Further, we know that the genital *congestion* and tumescences cause a double secretion of alkaloid fluid from the cervix—which offers a favourable medium for the survival and transport of the sperms, and of very slippery transparent mucus from the glands of the *vestibule—Skene's* and *Bartholin's*—which facilitates the entry and deep penetration of the male organ.

All this means readiness, not only for congress, but also for fertilization. Without this readiness, both are *difficult* and sometimes impossible.

The prelude to sexual intercourse is intrinsically psychic rather than physical. It should not be too short, nor should its *crescendo* be too rapid. Naturally, precise directions are impossible, ridiculous and even repulsive in such a delicate though intimate approach : neither can it be reasoned out and logically planned, but must be spontaneous. And there are more human beings in whom the appreciation of the prelude exists than there are happy erotic artists, who can express and meet this appreciation without false shame and awkwardness ! They may be referred to the example set us by many animals, who woo their mate with the most prolonged patience and with admirable grace and skill, alternately advancing and retreating, and thus preparing most efficiently for the final purpose of this elaborate and absorbing " game." But, of course, there must be mutual

attraction if it is to succeed. There must be the erotic spell —otherwise the most intricate manœuvres fall flat. Here, too, love is favourable to new life, both generally and in a specific sense.

It may also be suggested that the following "plan of campaign" has good prospect of success. Let the partners abstain entirely from intercourse from the onset of menstruation for twelve days; let them, if possible, separate completely for that time and only meet again on the twelfth day in some attractive environment, and let them celebrate a little two-fold festival together. Details must be left to individual tastes (and means !) but these tactics combine the effects of temporary abstinence and absence; appropriate date in monthly cycle; probable accentuation of desire; and favourable circumstances for meeting again: they are both physical and psychic.

We have now to consider the actual technique of coitus in promoting fertilization.

How exactly do the sperm cells enter the uterus? This is the point where actual coital technique can be important and almost decisive. The further transit of the male cells is beyond the reach of action during coitus; when the womb has once been entered the spermatozoa make their own way, but it is immensely important to do all possible towards facilitating their entry into the womb through the *os externum uteri* and the cervix.

Broadly speaking, this entry may be effected in four ways:—

(1) By means of their own impetus and active movement. Their passage through the genital tract will be all the shorter and easier if ejaculation takes place immediately in front of and close to the *os externum uteri*. Nevertheless, the spermatozoa can independently traverse long distances. They *can* penetrate the internal organs and fertilize the ovum, even if the female organ take no active share in the act, *i.e.*, when the woman is cold and unresponsive but passively suffers the man's contact. But, of course, active participation by the woman is very favourable, as the

secretions of " distillation " are a good medium in which the sperms survive, and also full of substances whose chemical affinities impel them forwards into the upper genital tract.

(2) The spermatozoä may be directly sprayed or ejaculated *into* the *os* or *against it.* This can only happen if the male urethral orifice is in the immediate neighbourhood of the *os uteri.* A simultaneous female orgasm immensely helps the chances of fertilization.

(3) The spermatozoä may be caught and drawn into the uterus by the action of the mucus plug, or " *Kristeller* " * Although I cannot regard it as probable that the *Kristeller* captures the sperms as an ant-eater its insect prey, it can certainly protrude during the orgasmic contractions and then, as it is drawn back by suction, any spermatozoä which have become embedded in its mucus, are pulled through the *os* as in a vehicle ; or they can lash and forge themselves up the thick gelatinous mass as though they ascended a ladder.

(4) Finally, the spermatozoä may reach the uterine cavity through the action of suction alone ; a very rough comparison, which may make this clear, is to a pear-shaped rubber ball with a small aperture at the narrow end ; if the ball is pressed together and then *slowly* released while the tip is immersed in some fluid, some of the fluid is drawn into its interior. In the case we are discussing the fluid is, of course, the semen ejaculated into the *posterior fornix* or *receptaculum seminalis.*

All these factors may, occasionally, combine. But the most actively operative is the independent motility of the spermatozoä. The remaining factors may, however, so help or hinder this motility that fertilization may finally depend on the woman's organs and their functional share in coitus.

Therefore there are two essentials which interact closely : orgasm should occur in both partners, either simultaneously or as nearly so as possible ; and ejaculation should take

* For a detailed account of this curious—and still partly mysterious—object and its action, see " Ideal Marriage," Chapter X., pp. 197-199.—(Tr.'s Note.)

place against the *portio vaginalis uteri* and, if possible, into the *os externum*. If one of these conditions only is fulfilled, there is distinctly less likelihood that the spermatozoä will enter the uterus ; but *both* have great significance. Female orgasm, without male ejaculation against the *portio*, causes the secretion of substances highly favourable to the further transport of the spermatozoä ; and ejaculation against the *portio* hurls them at their goal and sometimes into the cervix, especially if the woman's orgasm and contractile movements cause the closest possible contact between *glans penis* and *portio*.

Therefore we may say that, although full feminine participation and satisfaction in coitus are not *indispensable* to fertilization and pregnancy—experience gives many sad instances to the contrary—yet they are *always favourable* and *sometimes decisive* in the attainment of fertilization ; and this, too, has been proved by experience.

Thus, just as those who desire sexual pleasure must be prepared either to welcome or to endure the certain or possible consequences, those who desire the fruition of sex in offspring must not despise or condemn its specific pleasure. The ascetics who condemn " the lusts of the flesh " may well reconsider their attitude ; so may certain medical men who think it beneath their professional dignity to promote the orgasm in their patients by careful consultation and advice. Thereby they fail deplorably in their physical and ethical obligations to those under their care ; and, if they omit this extraordinarily important human experience from their consideration and even from their private study, they can only give very imperfect aid in overcoming involuntary sterility in their patients. This is especially the case in association with the actual mechanism and technique of coitus.

Yet we must again emphasize the part played by emotional " climate," by mood, preference, inclination, apart from all bodily contact, and especially in the woman. A woman's *(habitual or temporary) emotional or psychical attitude towards her husband may outweigh acute physical stimulation, and often prevents alike the ecstasy of orgasm and the subsequent relief.*

Here, too—*love*, that incalculably potent psychic factor, may decide, *not only gratification, but impregnation*. How many witnesses life brings to this!—the numbers of "love-children" and the many cases where, after years of sterility with an unloved husband, a woman conceives in the arms of a lover to whom her whole being responds!

Yet other women may long for and enjoy the initial stages of communion, but have difficulty in reaching culmination, even with those they love. There is a great difference in the *usual* rate of vibration and sensation—the distinctive erotic *tempo*—here; especially in women who have not much experience (of course, there are pronounced exceptions). The best methods of equalizing this double rhythm and the further accessory arts of love have been so fully dealt with in "Ideal Marriage" * that it would be superfluous to repeat them here.

In the following pages I shall therefore assume that the particular erotic occasion has been quite successful, in that the man's orgasm and ejaculation and the woman's orgasm, muscular contractions and relaxation, have practically coincided. Let us therefore consider in what manner the seminal fluid may be discharged, *i.e.*, the spermatozoa propelled, as swiftly as possible, to the uterine goal. Here, too, we have already made some suggestions and statements based on original observation and study; these will not be reiterated in detail, but some further aspects will be discussed.†

On Plate VIII. of this volume there are four diagrams, drawn to scale, of the normal contours of normally developed feminine organs in various attitudes and in vertical section. They should be compared with the general diagram of the female genitalia on Plate II. in "Ideal Marriage," reproduced in this volume as Plate I.; this plate is life-size; the smaller diagrams are half life-size. The local anatomy is most important and somewhat complex, and must be borne in mind when considering methods of coitus.

* See, *op. cit.*, Chapter VIII., pp. 165–171 inclusive; and Chapter IX., pp. 172–177 inclusive; and also pp. 192–193.

† See "Ideal Marriage," Chapter XI., "Position and Action during Coitus," pp. 211–243 inclusive, which should be carefully read and collated with the present Chapter.—(Tr.'s Note.)

On Plate VIII., the first two diagrams, Fig. 1 and Fig. 2, represent normal organic proportions, as have been emphasized by the learned authorities, from whose works I have had permission to borrow them. Yet, careful scrutiny reveals *distinct structural differences* between them; for instance, in Fig. 1 the vagina shows a concave bend forwards; in Fig. 2 it bends backwards and is longer, with a general backward *slope* as well as *curve*; also the uterus, and especially the *portio vaginalis* with the *os externum*, are all set higher in the body and further backward than in Fig. 1. Both conformations are entirely within the limits of *the normal*, but Fig. 1 represents *typical* normality. Other respective proportions and modifications, also fully normal, may arise through special attitudes, through the pressure of loaded bladder and bowel, or as very slight individual anatomical differences.

Fig. 3 and Fig. 4 on the same plate, VIII, indicate the effects of *position and attitude*, on the situation of the uterus, the length of the vaginal passage and the exact angle of the *os* and *cervix uteri*. In both examples, the woman lies on her back: in Fig. 3 she lies horizontally with extended limbs; in Fig. 4 the legs (and therefore also the pelvis) are bent at a sharp angle. The latter attitude shortens the vagina and flattens the *posterior fornix* or vaginal vault (Laquear posterius) and the *os uteri* is no longer directed slightly backward, as is usually the case, but "looks" straight along the vaginal passage. Moreover, the direction of the cervix is no longer the same as in the horizontal attitude of the woman, where it is almost at right angles to the vagina (Fig. 3), but the two passages are almost in line, along the axis of the pelvis (and parallel to the spine).

We must also bear in mind that the phallos (the erect male organ in action) has normally a slight curve, upwards and backwards towards the man's abdomen. In general it may be said that the most appropriate method of bringing the *glans penis* of the man as near as possible to the *os uteri* is by the deepest possible penetration.

This rule is not invariable, however. In all cases of an unusually low-set uterus and/or portio vaginalis and corre-

spondingly deep vaginal vault (Laquear or Fornix), extreme penetration means that the semen is ejaculated not into the *os* or towards it, but at some comparative distance away, and in a different direction. This is what happens in cases of *slight uterine prolapse combined—as is often the case—with a greater or lesser degree of retroflexion of the uterus.* These conditions are not infrequent after the first confinement, and should be taken into account when a further child is desired, but not conceived. But there may be these particular conditions in nulliparæ * ; and, even when there is neither uterine retroflexion nor prolapse, the *portio vaginalis* may be nearer the *introitus* (mouth of the vagina) than usual, and the *posterior fornix* may be so deeply arched and hollow that both phallos and semen are deflected from the *os*. In such cases it is, of course, impossible to regulate the exact moment of ejaculation ; but the *position* and *attitude* of the two partners may be modified, as suggested in Fig. 4, Plate VIII., and in Chapter XI. of " Ideal Marriage," where this special variation is described as the Third attitude of the First, or converse Position.† The fornix is flattened and made shallower, and the *os* inclined at a more negotiable angle. This variation may be tried on the chance of succeeding in attaining impregnation ; or it may be definitely advised by the medical practitioner after examination of the woman's organs in both normal and flexed attitudes.

If the Flexed Attitude in the converse, or face to face, position has not the desired result, I recommend—particularly in case of a structurally accentuated vaginal vault—the Kneeling Attitude, or Ninth in the Averse (Backward) Position, and in its extreme, almost quadrupedal, knee and elbow version.‡ The loin muscles should be tense and the nates protruded. For, if the trunk is kept more or less horizontal, the vaginal inclination is slightly vertical, but, in the knee-elbow attitude it is almost horizontal, and increased pelvic angle makes the vagina slope downwards

* Women who have not yet borne any children.
† See, *op. cit.*, pp. 218–221, " Attitudes of Flexion."
‡ See " Ideal Marriage," Chapter XI., pp. 233–236 inclusive.

from the *introitus* to the *portio*. Moreover, as described in detail in "Ideal Marriage"—the uterus and the whole contents of the peritoneal cavity descend towards the abdominal wall and thus the *portio* and *os uteri* are the *nadir* of the vaginal passage; the fluid contents of the vagina thus flow towards this particular point and are drawn towards the uterus by combined gravitation and suction. Thus the fluid ejaculate surrounds the *os uteri* and does not collect in the vaginal vault, as though in a pouch and, therefore, the *portio* and *os uteri*—if proportions are normal—are bathed and immersed in the seminal liquid. Orgasmic uterine contractions aid further in drawing the spermatozoä into the *os* and *cervix* by suction and subsequent relaxation. As the ejaculate requires a few seconds to collect in the vagina, it is desirable *to prolong the feminine orgasm*, or slightly to delay it, *or, if possible, to afford the woman the delight of a second orgasm.* Of course, even if the orgasm is not repeated, complete satisfaction and relaxation will generally be efficacious, as they normally occur a few seconds after the man's culminating ecstasy. Special measures to delay, enhance or repeat the woman's culmination are obvious and intelligible to careful readers of "Ideal Marriage" or students of the art of Love, or may be, if necessary, indicated by a wise and considerate physician.

The special difficulties of this attitude arise from the *different declinations or slopes* of phallos and vagina respectively. It may be helpful for the woman to kneel with trunk horizontal in the first stages of intercourse and then, when emission has taken place, to assume the quadrupedal, knee-elbow, attitude, with protruded buttocks and tense loins. She should then remain for some minutes in that attitude.

There are similar difficulties in the flexed attitude of the converse position, as depicted in Fig. 4 of Plate VIII., for there, too, the slopes of phallos and vagina somewhat diverge. There are, of course, many individual variations; the vaginal curve may be more or less pronounced, and, in some men, the phallos is more elastic than in others. But there *is*, after all, this slight divergence of organs. How is

it to be met ? In two ways : first by insertion of the phallus while the woman's thighs are only slightly raised or flexed, and then by gradual increase of this flexion, which should attain its fullest degree at the moment of ejaculation—otherwise the whole procedure fails of its purpose. Secondly, by modifying the classical version of the flexed attitude, in which the woman's legs are stretched out and supported on the man's shoulders. I suggest, rather, that there should be a double flexion of both thighs and knees and that the woman should open her thighs as widely as possible, and that the man should be between her thighs. If the man's trunk and thorax lie as flatly and closely as possible over the woman's, (no cushions or pillows !) the maximum flexion of knees and hip joints does not cause the divergence of declination in the organs to be inconvenient. Nevertheless, caution and gentleness are advisable, especially at first. The very advantages of flexion for causing pregnancy—*i.e.*, deep penile penetration and the flattening of the vaginal vault—*involve danger of laceration* if the man's movements are extremely vehement. The diagrams in Fig. 3 and Fig. 4 of Plate VIII.—which have been taken from illustrations to *Bumm's* [72] " Operative Gynäkologie," cited in a work of *E. Fischer's* [73]—were used by the latter in order to illustrate a case of this description, where violent coitus in the flexed attitude caused laceration of the posterior vaginal vault. But such deplorable accidents may be avoided with comparative ease by due care. Exercise and adjustment will also meet the demands of the flexed attitude on general suppleness and muscular tone : for mutually desired parenthood is worth some trouble !

The advantages of the flexed attitude for reproduction consist in the shortening of the vaginal passage, the flattening of the posterior fornix or vault (which may make a difference of between 1 and 2 cm., according to measurements on a living woman), and the descent of the *portio* and *os uteri*. Penetration up to the whole length of the phallus is possible because of the forward pouting and dilation of the introitus ; and, finally, the *os uteri* is about in the centre of the vaginal passage and the cervix is in a line with, and not

at an angle to, that passage. If an abnormal stretching and slackening of the vaginal walls does not favour *deflections*, the penile tip will touch and push inwards the *portio vaginalis;* and the pouch of the *fornix* will be completely smoothed out; and in the very centre of the *portio* is the *os uteri*, giving access to the upper genital tract. If the intromittent phallos is closely clasped by the orgasmic contractions of uterus and vagina, as well as by the muscular systems of the pelvic floor—and this latter embrace may be voluntarily cultivated, as we shall show—and has also penetrated as far as possible before and during the man's orgasm, then the two tiny apertures of both the glans penis and the portio vaginalis press closely each to each, and *form, for a few moments, a practically continuous passage for the seeds of life to traverse.*

Thus there is the greatest possible facility for ejaculation straight into the *os uteri*, and also for the peculiar action of the Kristeller. And, finally, the spermatozoa are as close as possible to the cervix, which they can ascend by their own motility.

In order to facilitate further the upward advance of the spermatozoa, the woman should not resume her upright position immediately after coitus, but should lie still for a certain length of time, *retaining the flexed attitude.* This attitude may be rather trying, but it is quite endurable if the husband considerately arranges some pillows or cushions so that she may be as comfortable as possible * for not less than half an hour if there has been unmistakable difficulty in attaining pregnancy. If, however, there has been no such special previous difficulty, it will suffice to adopt the flexed attitude *during coitus and for a few minutes after it has been completed.*

* The pillow or cushion must be put in the right position, and *not too high.* It should be placed just beneath the buttocks, and support the part between anus and coccyx. Fig. 4 makes this clear. *There should be no cushion under the pelvic arch,* where it is so often placed, during and after coitus in the *normal* attitude (horizontal, man over the woman) in the hope of promoting conception. Of course (see Fig. 3) the cushion only helps *if it is just under the lowest part of the coccyx;* and, at the same time, pelvic declination must be reduced by keeping the limbs raised and flexed at the knees. *If the woman lies with the cushion under her loins and stretches out her legs as well, it may well result in the exact contrary of what is intended.*

If the spermatozoa are abundant and healthy, and the woman's susceptibility not below the average, coitus in the "normal" or medial position * (No. I. in the Synousiological Table in "Ideal Marriage") is quite favourable to fertilization and especially so when the uterus is not set too far backwards in the body, the vagina is not unusually long, and the posterior fornix not too hollow and cup-like (see Figs. 1 and 3, on Plate VIII.). There is less immediate likelihood of ejaculation into the *os uteri* than in the flexed attitude, but the chances of direct "insemination" must not be under-estimated when we remember that the uterus is somewhat "erected" during orgasm, so that the *os* is directed less definitely backwards than is usual, but "looks" towards the mouth of the vagina, and that the exact angle at which the seminal fluid is sprayed from the male urethra is slightly oblique because of the peculiar structure of that organ. *Moreover, conception does not depend wholly on direct insemination*—although it is probably effected in this way more often than we gynecologists have, in the past, been ready to admit.

If "normal" or medial coitus is performed in a "normally built" woman (*whose organic proportions are those depicted in Fig. 2 of Plate VIII.*) is the prospect of impregnation, also "Normal," or "average," or fairly good?

Yes, if the phallus is long enough and the anatomical structure and mutual adjustment of both partners are such that penetration is possible along the whole length of the vagina. But, if the phallus is too short, or if there is too much adipose tissue in even one of the partners; or, in cases of pronounced *lordosis* † in the woman, and its attendant increased pelvic inclination, and for lack of experience and dexterity in these intimate matters: in such conditions the male organ does not reach far enough, and emission takes place *against the vaginal wall.* Of course, even then the

* See Chapter XI., *op. cit.*, pp. 213–214, as well as the tables, pp. 238–239. In Western civilizations the medial attitude is only too often the only one known and practised between married couples, to their own loss and detriment.—(Tr.'s Note.)

† Or "Saddleback," the peculiarly graceful and extremely sexual inward curve of the spine at the waist and just above the hips and nates. (Tr.'s Note.)

spermatozoa may ascend and reach the cervix, but this form of coitus cannot be termed directly favourable to fertilization.

Nor is the flexed attitude particularly favourable (in cases such as in Fig. 2, Plate VIII.).

And, if the Ninth Attitude of the position *a tergo* (*i.e.*, posterior flexion) is adopted, and the woman kneels, the uterus becomes more accessible, but the vagina is drawn out and lengthened. Probably the most appropriate prescription here is the *posterior-lateral* (Attitude VIII. of the Table in " Ideal Marriage ").* The woman's trunk should lie at an angle to her slightly raised and bent legs—of course, on her side, while the man lies at length, also sideways, and approaches from behind. In this position there is possible pelvic adjustment, allowing fairly deep penetration ; direct insemination through the *os uteri* is not achieved, but ejaculation takes place near enough to allow suction of sperms into the cervix : of course, for this (and other reasons !) the woman's right of orgasm must be attended to and fulfilled !

A further indication for lateral coitus is that it gives every chance for *manual* stimulation and caresses, whereby a woman who is somewhat tepid, or even frigid, may be excited and delighted until her orgasm supervenes.

These suggestions as regards positions and actions promoting fertilization will probably suffice, both for these and similar cases. Married couples who are, of course, unable to judge their own internal structure and " congruence," will hardly be able to dispense with professional advice—but it is equally certain that the consultant cannot really help them here, unless he knows how to recognize and evaluate these minute and delicate individual diversities.

There can be no doubt of *the importance of muscular tonicity and activity*, both for communion and fertilization and, apart from the involuntary reflex action of the " smooth " muscles.†

* See also, *op. cit.*, pp. 229–233. " This attitude can certainly be, for both partners, the least exhausting of any ; it implies the fewest and external obstacles and the least exertion " (p. 230, " Ideal Marriage "). (Tr.'s Note.)

† This subject is treated in detail in " Ideal Marriage," pp. 68–71 inclusive, Chapter V.

The intelligent and persistent use of the "ridged" or voluntary muscles is highly advantageous, although it is perhaps fortunate—for the accomplishment of nature's purpose—that reflex or involuntary muscular action predominates in coitus. Here, too, the average Europeans of to-day, men and women alike, are in a bad way. The woman has often not even adequate reflex action because the man's reflexes occur too rapidly, owing to lack of technique!

But even where the woman achieves a genuine orgasm, both her smooth and her ridged or "voluntary" pelvic muscles act automatically. Her active share in the movements of coitus is limited to movements of her buttocks, loins and pelvis, which follow and slightly enhance the man's forward lunges. But, except in very rare cases there is *no definite deliberate culture and exercise of the muscles surrounding the genitalia and within the vagina.* Even when the feminine organs sway in time to the man's dominant chords, they remain the "Vas naturale," the *volitionally passive vessel and receptacle,* with which Christian moral theology has stamped them.

The modern European woman has no idea that she can *deliberately train and move* her genital muscles in such a way as both to increase her own and her partner's sexual pleasure, and also promote fertilization and pregnancy. And her husband is equally ignorant.

The science of preparation for pregnancy, like the art of delight in love, has been almost entirely lost to the peoples of the white West. Of course, fertilization may and does occur daily, where the women have no share in coital sensation or action! We know that well enough. Even in spite of measures of prevention, spermatozoa can enter the vagina and pass further to their goal. But there are other cases, where pregnancy would be welcomed, but is not achieved; even if there are no obvious morbidities or abnormalities in either partner. *Does everything work harmoniously together at the critical moment?* And "everything" includes, of course, the active co-operation of the woman through voluntary muscular action. In the words of Vignes [70] "L'action de ce système contractile n'est pas indispensable

à la reproduction, mais elle est singulierement favorable aux fins de la nature." *

The particular muscles, which I have here termed *genital*, may just as accurately be termed *perivaginal*. In "Ideal Marriage," they are distinguished as "Constrictor Cunni"—"Closer of the Introitus"—and "Levator Vaginæ" †—"Lever of the Vagina," and depicted in the Plates of that Appendix. In our present study they are shown on Plate III., Fig. 1, especially the Levator, which appears distinctly in vertical section, and is designated by initials L. V.

The working of these muscles is not quite simple, and especially is this true of the Levator.‡ Roughly speaking, their action narrows the vaginal corridor and pulls the posterior (backward) wall upwards and forwards. But the contractions need not be even or regular; the Constrictor and Levator may contract rhythmically, alternately, separately or together. And the muscular rings round the vagina may move independently. On Plate III in "Ideal Marriage" *C* designates the muscle which may be termed the *Levator Vaginæ* in the narrower sense. A doctor conducting a gynecological examination cannot fail to notice any vigorous contractions of this muscle; it is the agent in those painful cases of "Superior Vaginism" or "Penis Captio" in which the male organ is gripped and compressed by the *cramp*, in which the neighbouring *Levator Ani* shares. And both woman and man, during coitus, are aware of the action and pressure of the *Levator Vaginæ*. The contractions are generally perceived further up the vagina than the diagram suggests. And, curiously enough, it may be felt sometimes higher and sometimes nearer the introitus in the same woman, which suggests that different fibres of this cluster come into play at different times.

All this sounds inexact, possibly unscientific! I know it—and yet I cannot express myself otherwise, for an increasing series of the most varied observations have convinced me

* "The action of this contractile system is not absolutely essential to reproduction, but it is, nevertheless, singularly helpful to the purpose of nature."

† See, *op. cit.*, pp. 68–70, and 174.

‡ See Appendix III. to this Chapter.

that these muscles exist and operate as I have said. A comparison of my conclusions regarding the living feminine organism, with *post-mortem* work, where there is also much uncertainty, complexity and a similar lack of complete scientific exactitude—will result in a remarkable harmony between clinical and anatomical diagnosis.

Let us now consider a relevant test on a living subject. I refer to a simple definite personal experiment made by a woman of about thirty years of age on her own person in order to discover, (*a*) whether a woman could draw conclusions from an attempt to use her perivaginal musculature, and (*b*) if so, how this could be done.

For some years, the lady in question had taken an interest in the theory and practice of physical culture. She was a promising student at a very famous gymnastic institute; she was also a married woman and had practised "ideal sexual communion" for between six months and a year.

Without having read my comments on this matter in "Ideal Marriage," or any other treatise on the subject, nor having studied the anatomy of the perivaginal muscles, she was nevertheless endowed with a remarkable sense of muscular co-ordination, and finely trained and tonic muscles in the pelvic floor and elsewhere. The first sensations of orgasm in her married life had been doubly an *experience* to this woman, for she had suddenly become conscious of her *ability to affect the contents of her vagina, that is the phallos of her husband, by means of intentional muscular contractions of varied nature.*

In the course of her experiences and careful observations she soon learnt to differentiate between the muscular action which "*narrowed the vagina and gripped and clasped the male organ*" and that *which* "*sucked and held and drew it inwards.*" She described the second action as follows: "It operates through a different set of muscles than the first, and the contraction is so powerful that it is felt outwards to the *Labia Majora* and by the husband's organ as it slips out after intercourse, although that organ is already relaxed and smaller." In a subsequent account she said of the clasping

contractile movement: "that it felt as though an elastic ring were surrounding the phallus and that the upper part of the vagina was 'snapping' at it." * And she added that: "the impression of something that 'snapped' at the penis was very strong."

This is obviously a graphic but empirical account of the working of the Levator Vaginæ and Constrictor Cunni musculature, as experienced by the woman herself. And it is further evident that the first description applied to a general tension of the levator musculature, and the second description to a more localized contraction.†

The lady in question carried out the following two simple tests:—

(*a*) In order to test the working of the muscles which had appeared to clasp the male organ in coitus, she introduced a speculum which she had previously rinsed and soaked in warm water. "Through contractions of the muscles of the orifice (Constrictor Cunni) as distinct from the deeper muscles of the upper vagina, it was possible to *move the speculum*: it was drawn or sucked into the vagina during the contractions and slipped out as the muscles relaxed. The movements of 'snapping' were quite ineffective as the speculum was not deep enough inside."

(*b*) (Experiment to test the power of voluntary contraction in the deeper vaginal muscles.) "A narrow tube or uterine sound was introduced. The 'snapping' contractions moved it vigorously to and fro from left to right; it almost rotated. The sound must be inserted very far and in this case a rubber one was used. The difference between 'snapping' and 'sucking' is clear."

* Literally, she said, "the *os* was snapping at it." Again, the difficulty of the lay person in clearly visualizing genital anatomy and physiology! Gynecologists know, since the publications of *R. Beck* (78*a*) in the *American Journal of Obstetrics* (1874) that the *os* can "snap" or "snatch" at the semen, and that it often does. But there can be no question of any snapping of the tiny *os* at the relatively enormous male organ. The snatching or "snapping" sensation must have been caused by the contractions of a muscular group in the upper vagina. As the term "snapping" has been used for the *os* since *Beck's* discoveries, it is clearer to make use of it in quotation marks, with reference to muscular contractions. (*Beck's* work is listed under reference.(78*a*)

† See above, and also "Ideal Marriage," *loc. cit.*

Although these interesting independent testimonies require some modifying comment, I have, so far as possible, quoted the experimenter's own words, as these will probably appeal more favourably to many women readers than a scientific and technical report would do. On the whole, this lady's results concur with my own; both in actual research and clinical work.

The exact significance of these muscular contractions is comparatively easy to understand. The more powerful and well-trained is their voluntary action, the more effective is their *purely reflex* action also. The voluntary contraction of these muscles in the earlier stages of actual coitus—*i.e.*, after insertion—but before ejaculation—can effect the male organ in various ways, delightful to both partners and favourable to conception, even before the purely reflex action of the convulsive orgasm.

But we must distinguish between the two sets of muscular *actions*. The *Constrictor Cunni* is the agent which holds a male organ not yet sufficiently erected, and stops the possible backward ebb of blood from the veins, and also, by its grip, prevents the ebb of seminal fluid from the vagina at the conclusion of the act. The *Levator Vaginæ* if fully contracted *alone*, would have the opposite, *i.e.*, *expulsive* effect; the Levator comes *into play during and just after the orgasm*, both by contraction of the vagina, especially its posterior wall and by squeezing and pressure of the *glans penis* against the *os uteri*—obviously most favourable to direct insemination.* Of course, during orgasm the Levator action is *reflex*, but a vigorous voluntary contraction afterwards cannot be other than favourable to conception, and beforehand as well, such voluntary action supplements and enhances reflex movement.

Combining or *alternating with the Constrictor Cunni*, the Levator can exercise a peculiarly potent spell; a stimulus which may be most beneficial but, in certain cases, even excessive and injurious † to the perfect completion of the

* *Marion Sims*, one of the founders of modern gynecology, emphasized the importance of this action of the Levator.(74)

† Excessive and injurious when the man's excitability is so great that his ejaculations happen too soon.

sexual act. At least these muscles give the woman *an opportunity of active performance as well as passive experience*, which may be of the greatest help to herself, her partner and their mutual happiness and fertility.

We conclude, therefore, that women should understand how to control these two groups of muscles, and especially how to set each in motion separately. This is, at present, very exceptional: only a few women have this capacity "inherently," and, until now, there has been hardly any opportunity for training—in Western Civilization at least.

How can this training be given? There are various possibilities, and each involves certain objections. In "Ideal Marriage," I urged gynecologists to suggest contraction of the perivaginal muscles to their patients during professional examination and to observe the results and encourage their patients to continue.* This is a fairly rapid method of instruction, but I admit that certain considerations may make it inadvisable in certain cases.

A second method was shown by the lady whose interesting account of a test on herself I have quoted above. Her acute judgment on the subject is shown in her final comments: "These 'exercises' *in themselves* are trying and exhausting, as they are not accompanied by voluptuous sensations, they are simply a task and an effort. I do not think anyone would continue them thus for any length of time. But, of course, individual genital susceptibility is very varied! The exercises have this advantage: that every woman can try them without another's help. The least specifically exciting method is certainly (*b*)—the method of the small sound. In (*a*) there is a likelihood that the woman may continue to exercise for other purposes than muscular development." I need add no further comment.

There is a further possibility which avoids actual contact, and this consists in placing some small object in front of the introitus and endeavouring to concentrate and direct the muscular contractions towards it. This method is in common use in physical culture with reference to an *imagi-*

* "Ideal Marriage," p. 70; and also pp. 68–71 and p. 174.

the main group and pass downwards into the connective tissue which separates rectum and vagina, and are connected with the lower portion of this tissue in certain places. Some anatomists doubt or deny that any groups of muscles surround the vagina concentrically. But they emphasize the fact that there is a certain portion of the *Levator Ani* (termed *portio puboccygea*) which passes closely on both sides of the Vagina and, when compressed, narrows the vagina appreciably, at a particular point; that is to say, the vagina is *pressed inwards from either side.*

This phenomenon may be tested by examination in living women. Nevertheless, *clinicians* (as distinct from anatomists) ever since there was any gynecological science, have concurred that the Levator contracts the Vagina principally from *front to back.* Experimentally, this has been proved by the impressions left on wax cylinders introduced into the vagina.

Vignes says, in his " Physiologie de l'appareil génital femelle " : " La méthode des contractions sur cylindres de cire a montré que par l'effet du releveur, la diminution du calibre vaginal est beaucoup plus marquée sur le diamètre antéro-postérieur que sur le diamètre transverse." *

Thus, even if the Levator Vaginæ has no recognized anatomical existence in text-books, its existence and effects in practice and in life have long been known, though under another name.

* " The method of registering muscular contractions on wax cylinders introduced into the vagina has shown that the Levator contracted the vaginal passage much more definitely from in front backwards than from side to side."

CHAPTER VI

STERILITY IN WOMEN

PART I

Significance, Causes and Mechanism

STERILITY is a circumstance of fundamental importance in the mental and bodily life of women and can be equally crucial for the happiness of marriage and its reverse.

For normal women, in spite of all the difficulties and dangers of maternity, have a deep urge for children, or at least for one child. Involuntarily childless women are constant visitors to doctors' consulting rooms and often the desire for children becomes the stronger with advancing years. The effects of involuntary sterility may be very painful and disturbing to the psychic faculties and mental balance. The desire for a child may sometimes lead to the symptoms of simulated pregnancy which the doctor has the sad duty of explaining and diagnosing aright.

In its effects on married life, involuntary sterility can destroy affection and happiness, especially when one partner believes, or knows, that it is wholly due to the other spouse's past or present conduct, or when the thwarted longing for parenthood outweighs all other considerations. Medical men have been urgently required by women patients to perform "*artificial insemination*" with fluid from total strangers, when all other means failed.

What work in occupation or profession means to normal men, motherhood means to normal women. For mentally "normal" and physically healthy women *unwelcome* sterility (especially sterility whose causes are due to the male partner)—is an unnatural and often torturing state and can bring definite disasters, such as psychic unbalance and lack of physiological rhythm and complete functioning.

The genital organs may suffer by abnormal reactions in the local tissues, by profuse morbid secretions, inflammations of the endometrium and morbid growths and cysts and dermoids of the ovaries (see *Sellheim* [75] and *Kehrer* [76]).

This problem is second to none in its human and its technical importance. Doctors must study it with the utmost care. But it is also urgent that those patients who suffer from unwanted sterility should know precisely *why* and *how* they are sterile. This knowledge will enlighten and encourage them to take active remedial measures and will help to avert further danger if the sterility is due to disease ; moreover, some forms of sterility are amenable to early and skilled treatment and the knowledge of this possibility is due to the patients, with whom the physician should discuss appropriate measures.

A final reason for the rough knowledge of the causes of involuntary sterility is that it may prevent the occurrence of such sterility. " Prevention is better than cure."

Sterility is, strictly speaking, the *failure to conceive.*

A woman is sterile if and when she is not able to produce functionally apt and ripe ova from her ovaries ; or if, in spite of such normal production of ova, and the experience of sexual intercourse, she fails to conceive because of reasons special to herself. And, of course, *there may be sterile marriages of women who are not necessarily sterile themselves as individuals.*

We can hardly set up a definite term of years after which sterility may be considered genuine. Individual circumstances and idiosyncracies are crucial in these matters.

We must also bear in mind that much so-called sterility is *masked infertility* : that is, inability to retain and further evolve *ova already fertilized.* This masked infertility *may appear to be inability for fertilization.* In such cases there are very early miscarriages of young already implanted embryos, which pass away with the symptoms of profuse and slightly delayed menstrual periods ; or more complex conditions, in which fertilized ova are dispersed or absorbed in the uterine cavity or the oviduct before they can " adhere "

—cases such as have been described by *Fränkel* [77] and *Schönhoff*.[78]

As a rule three years of "normal" but barren married life will imply *genuine* sterility.

We classify sterility as either primary or secondary. Primary sterility is inherent and Absolute. Secondary sterility sets in after *some degree* of previous reproductive activity. If a woman becomes sterile after giving birth to her first child, or after undergoing a miscarriage (natural or artificial) in her first pregnancy, we speak of *one-child sterility*.

A woman may be *relatively* sterile with one man—of course, he must be himself potent and able to beget children; or she may be *absolutely* sterile, if diseases or complicated processes in the internal organs make it impossible for her to become pregnant.

Sterility, strictly so termed, must be carefully distinguished from the temporary postponement of conception which sometimes causes anxiety to young couples desirous of children in their first months of married life. The causes of this delay in conception from normal intercourse are generally trivial and even commonplace, but they must be recognized for what they really are as, otherwise, an unnecessary and drastic interference and "treatment" may be undertaken, which—*in such cases*—defeats its own object.

The immediate causes of this postponed *fertilization* are (*a*) The imperfect adjustment of the partners to one another—for it must not be forgotten that a sexually inexperienced woman goes through great and rapid changes, psychic and organic, when that experience begins and continues, as a matter of frequent habit.

(*b*) Occasionally the stresses and difficulties of the situation are increased by positive acute pain in coitus caused by ignorance or awkwardness.* The young wife may be unable

* See "Ideal Marriage," Chapter XIII., pp. 255–263, for detailed suggestions and instructions as to how best to prevent this pain or reduce it to a minimum.—(Tr.'s Note.)

to attain to the climax of sensation—a climax which is so helpful to conception. When, by practice and consideration and attention from her husband, reluctance, dread and pain have been dispelled, the wife often conceives immediately on achieving complete satisfaction and relaxation in coitus.

The responsibility of husbands for their wives' involuntary sterility is still heavy, and may be considered as the *direct defertilizing agent in a third of all such cases.* The immediate occasions of the man's sterility are often morbid inflammatory conditions of the testes and epididymis which may have been " cured," but leave their mark. And such symptoms are, as a rule, the legacy of attacks of gonorrhea, perhaps forgotten, experienced years before, but still leaving traces in diminished supply and/or quality of the distinctive male secretions.

In a further large number of cases there has been *infection of the wife through an active gonorrheal discharge by her husband,* and consequent destruction of her potential reproductive power.

The woman herself is much less often responsible for her own sterility in married life.* This is alone proof of the injustice of blaming the wife as a " barren woman "—for guilt and blame are concepts which, however inadequate and painful, almost always appear, openly or implicitly, when spouses become aware that their marriage is sterile, against their fervent wish. Such a reproach is specially cruel, for it tends to cause inferiority complexes in the women who are sensitive, diffident and endowed with deep maternal impulses.

Primary sterility in women results from some inherent disturbance or deficiency in organic development. It is a constitutional anomaly and means that—from some cause or another—the ovaries do not manufacture and extrude ripe and functional ova.

* At least this was so up till the last decade, or fifteen years. But brides and wives who have been infected with gonorrhea or undergone abortions before marriage, or as a result of connections outside marriage, have become steadily more numerous and it is now doubtful whether the husband's responsibility, in these matters, is still the greater of the two.

Secondary sterility is caused, as a rule, by inflammatory diseases and disorders of the genital tract.

The chief agents in causing such diseases and disorders are gonorrhea and septic puerperal infections. These cause local inflammations (of the oviducts or tubes, and the peritoneum or membrane lining the abdominal cavity) which may entirely close the tubes, or so injuriously affect the ovaries that fertilization or, in some cases, ovulation becomes impossible.

Infertility is *biologically* the result of conditions which make the union of ovum and spermatozoön impossible; or which interrupt the normal evolution of the ovum, which has been already fertilized. These may include disturbances in the production of functional ova, disturbances in the mechanisms of coition or insemination, hindrances to the passage and transit of ova or sperms, hindrances to the conjugation of such cells, *i.e.*, to fertilization; and hindrances to the process of implantation and nourishment in the uterus, or uterine malformations leading to expulsion of fertilized ova, after adhesion has taken place.

These diverse and complex causes of sterility in women must, however, here be dealt with from the *practical* standpoint. The most frequent may thus be classified as :—

(*a*) General bodily conditions, constitutional and endocrine divergences from the typical "norm," which are generally inherent in the individual;

(*b*) Functional disturbances of psychosexual origin;

(*c*) Anatomical changes of the outer and inner genital organs.

We shall first deal with general or constitutional disturbances and anomalies, which are powerful, though far too often unrecognised. It will be impossible to avoid repetition and reconsideration of certain factors which have been already dealt with in the preceding chapters. This is unavoidable, and may—it is to be hoped—help a clear and complete grasp of the subject.

General conditions which impair the health of the whole body at once reduce the peculiar activity of the ovaries. Thus physical and nervous exhaustion and/or innutritious or

deleterious food very rapidly slacken and weaken the genital function and, in particular, the gonads. Monotonous, ill-balanced diet, in which vitamines, lime or cholesterine are absent, impairs fertility. Excess, especially excess in fat and flesh-forming substances, has the same effect. Stock-breeders have long been aware that changes of dietary may defer the mating season of various animals and thus minimize or wholly suppress their fertility. The research undertaken by *Frei*,[79] *Abderhalden*,[80] and others, has demonstrated that the gonads suffer particularly from lack of vitamines. Insufficient vitamine content means diminished follicular formation and maturation of ova. Equally thorough and important investigations by *Guggisberg* [81] have shown that full action and expansion of the gonads are largely dependent on the absorption of special food substances. *Guggisberg* made test experiments on rats with food which had been deprived of vitamine substances. The results—equally cogent for human beings—were total dislocation and then suppression of the cyclic function of the ovaries. Follicles and Corpora lutea were no longer formed, and thus no mature ova could be extruded, still less fertilized. Exclusive feeding, whether on carbohydrates, ovalbumin (white of egg) or fats, was equally injurious. The most essential vitamines were those known as B, C, and, above all, E. These are found in the kernels of cereals, in malt, fish, fruit—especially oranges and lemons—olives and linseed. These substances specially activate and nourish the gonads and accessory genitals, and are particularly favourable to ovarian efficiency. We may conclude not only that *general health and fitness* are *important to reproduction* in human beings, but that certain special food constituents—generally vegetable—are of peculiar value.*

Not only malnutrition but under-nutrition—starvation—has the same blighting effect on women's fertility. During the Russian famine, *Stefko* [82] proved that protracted hunger and insufficient nourishment changed the follicular activity of the ovaries. The special epithelium which formed the ova shrunk and shrivelled away into ordinary connective tissue.

* See Appendix I. to this Chapter.

During the World War similar results were obtained from observation of women suffering from anæmia and amenorrhea brought on by underfeeding and psychic suffering. These women lost both their periods and their power to conceive so long as their hunger and terror continued.

In humanity, as well as among animals, habitually excessive food has a sterilizing effect. Very well fed women who lead easy and lazy lives with little exercise are often childless, as any doctor with a wealthy clientèle can testify.

Climate, as well as diet has effects on feminine fertility. European women, who take up residence in tropical countries, often suffer a diminution of functional fertility which may make them childless. *Stieve* [82] emphasizes the complementary case of the Esquimaux women who neither menstruate nor conceive, that is, *whose ovaries are in a state of suspended activity*, throughout the six months' Polar Night.

In women of certain constitutional types, a change so *geographically* slight as that from country to town life inhibits menstruation, and sometimes causes permanent sterility. The Amenorrhea of country girls who flocked to large towns in Germany to enter domestic service—the so-called " Berlin-sickness "—is an instructive case in point.

In general, it is believed that low temperatures inhibit fertility and heat promotes it. The statistical proof offered for this belief is the maximum number of conceptions during May. But it is impossible to estimate how far other factors, psychic or social, come into play here; and even more impossible to ascertain whether we have to deal with some hitherto unrecognised cosmic rhythm.

We must regard the results of modern urban life as contributory factors in feminine sterility.

The nervous strain and exhaustion of most industrial and clerical employment, the long hours in badly ventilated rooms, either too little exercise or immoderate games and athletics, frequent sexual stimulation without its natural sequences of ecstasy and repose, excessive intercourse, or

none ; unsuitable food and lack of sleep : all these forms of damage and neglect affect the gonads subtly, but seriously. The male testicles recover much more rapidly and completely from deleterious influences, and can continue to produce spermatozoa, when fairly wholesome conditions of life are once more enjoyed. But the ovaries are intrinsically more easily harmed and, under prolonged over-strain or lack of nourishment or disease, they often lose the power of producing ova.

The supply of follicles in the ovaries is complete at the girls' birth and thus new follicles cannot be formed and, if the original supply is exhausted, sterility is unavoidable.*

It has been definitely demonstrated that excessive and habitual absorption of nicotine can cause sterility in both sexes, but more easily in women. In his experimental tests *Hofstätter* [84] caused shrivelling of the male glands and/or decreased conception and miscarriages in female animals. Similar results followed similar (injection) treatment with caffeine, so that immoderate coffee-drinking must also be regarded as unpropitious to reproductive power.

Habitual abuse of alcohol can also harm the gonads in women. The same is true of morphium, cocaine, hashish and opium.

Sterility in women may also result from intensive and long continued in-breeding. Certain materially fortunate and socially prominent circles are known for the infertility of their " cousin-marriages " and the same is true of families and stocks who are cut off from the world in mountain villages, and " racial islands," or who marry among themselves out of set principle, in order to preserve a special tradition of culture or language. As a rule, in such cases, diminished fertility in the previous generation is followed by barrenness in the next. Stock-breeders corroborate these observations. They are well aware that they can re-activate bloodstock by crossing with new strains, after prolonged in-breeding has diminished progeny. And certain governing classes make

* See Appendix II. to this Chapter.

an instinctive use of the habit of the mésalliance, with excellent results in preserving the vitality of the stock.

It is difficult to be certain of the exact mechanism of this so-called endogamous (or incestuous) sterility. Possibly there supervenes an exhaustion of the gonads, causing ova which perish and are extruded while yet immature and inept for impregnation.

Age is also highly important. Girls who marry very young have less chance of becoming mothers at once than those who have attained the full virginal development of their genital organs before marriage, *i.e.*, those who marry when between twenty and twenty-five years of age. Yet there are considerable ethnical differences in this respect, even among European races—and even more so throughout the world.

Late marriages always imply decreased fertility.

The relative age of husband and wife is also of significance. It has been statistically proved that men attain their generative maximum with women from five to seven years their juniors.

In considering accidental injuries to reproductive power, we must not omit certain forms and methods of contraception.

We know that habitual coitus interruptus (" withdrawal " by the man before emission) can lead to chronic pelvic congestion in women who are deprived of their orgasm, to inflammatory processes in the ovaries and to endometritis (inflammation of the uterine membranes). Some eminent authorities are of the opinion that coitus interruptus may even lead to myomata (uterine growths), which make conception very difficult, when it is desired.

There are other methods of contraception which do not prevent the woman from having her orgasm and which, therefore, do not lead to chronic pelvic and genital congestion. But the particular mechanical apparatus used may cause infection or block secretion in the uterus, and thus irritate endometrium and tubes, and close the tubes to ovulation. Many of the women who are suffering in this

way are absolutely unconscious of what is occurring, as the inflammations are not sufficiently acute as to cause pain, and the discharges they set up are treated as mere inconveniences, to be met by douching.

Even the apparently innocuous " vaginal douches " after intercourse may lead to catarrh and inflammation of the mucous membranes, if the liquid used is either cold or too strongly acid. They achieve their sterilizing purpose—but only too often they do so permanently.

An interesting occasional case may be observed in married couples whose life together has begun at an earlier age than usual and has been kept sterile by intention for some years. Later in their joint lives children are wanted, but the union remains sterile *against both partners' will.* It is not always due to the injuries mentioned above. The precise reasons and causes are often undiscoverable.

In certain cases, where there are (even slight) anatomical disparities or anomalies, a pregnancy which is warmly desired does not occur, because union does not take place at the best moment in the monthly cycle, or in the most appropriate manner and position. For details I refer readers to the preceding chapter.*

In Chapter V. we have also mentioned the possibility of a supersaturation of the feminine tissues with seminal substances which render them *immune.* As a rule this immunization is not permanent, but ceases when the excessive absorption of semen has been stopped for a while, or moderated.

There is, however, an incompatibility of biochemical constitution—rarer than and independent of the supersaturation aforesaid—which may cause permanent barrenness in a marriage between two people, neither of whom is, in themselves, sterile. At least, we cannot otherwise account for the rather infrequent cases in which careful examination of both partners has wholly negative results, while at the same time no treatment takes effect on their sterility; *and yet, after the dissolution of their marriage,*

* See also " Ideal Marriage," Chapter XI.

both the man and the woman become parents with other partners. Efforts have been made in such cases to "adapt" the husband's type of metabolism, by injecting minute doses of blood from his wife's veins at very frequent intervals. So far, we have not sufficient results to allow judgment on this interesting experiment.

Its theoretical basis we will not discuss, but there is no doubt that caution is indicated in its practice; that is to say, before injection or transfusion, the blood groups of each partner should be ascertained, for not every person can stand repeated blood transfusions from another special individual without harmful consequences.

And there may be a psychic, emotional, temperamental *incompatibility* as well as a strictly biochemical. This "incompatibility" is recognized in most civilized countries as ground for divorce, and it is also a possible cause of sterility.

For psychosexual causes sterility are neither few nor slight. We know that mind and soul (or mental and emotional factors) may have very appreciable bodily effects in women, especially after the thorough investigations of the subject undertaken by *Mathes*,[85] *Walthard*,[86] *Mayer*,[87] *Kehrer*[88] and *Liepmann*.[89] We all know how greatly painful and disturbing emotional experiences may disturb menstruation, and in what diverse ways, causing either suppression of the flow (amenorrhea), acute periodic pains (dysmenorrhea) or prolonged, excessive and irregular courses (menorrhagia). We also know how easily miscarriage may occur as a result of excitement or shock. Both sexual experiences (being interwoven between body and mind) and the ovarian function, are particularly sensitive to such influences. A woman's emotional life may certainly diminish her capacity for being fertilized or impregnated.

Gynecologists have long been well aware that general nervous or mental worries may cause amenorrhea and delay conception. Psychiatrists have often observed such conditions in cases of depressive psychoses.

If we further bear in mind that strong emotional excite-

ment of any description, whether painful or pleasurable, may bring on the monthly period out of due time, or, on the other hand, either abruptly terminate or completely suppress it, we shall fully realise that the successive stages in the approach and fusion of spermatozoön and ovum must be partly determined by psychic factors.* That is to say, joy and attraction promote such approach and fusion, while indifference, reluctance or repulsion hinder and prevent them. Therefore, as women are essentially profoundly emotional, psychically sensitive and nervously affectable,† it is extremely probable that follicular development, the maturation and the extrusion of ova are affected by psychic processes. The important experience of orgasm is much influenced, often determined or inhibited—by the higher cerebral centres. Orgasm often " touches off," or releases, ovulation, and ovulation makes further genetic stages possible. And lack of orgasm must surely " hold up " or deflect these further stages. In these cases conception often either fails to occur, or must be attributed to a " chance hit " as *Engelmann* [90] accurately remarked.

We have shown that habitual coitus interruptus leads to chronic pelvic congestion in women. The same is true of certain other substitute or inadequate gratifications, or excitations without gratification. In either case the chronic vascular tension and nervous strain may cause the Graäfian follicles to degenerate, or to burst prematurely. Such follicles then supply degenerate or immature ova, and the possibility of fertilization may become either (*a*) unlikely, or, if achieved, (*b*) may lead to degeneration of the product of conception.

The psychic processes during actual intercourse are enormously important.

A certain proportion of the cases of defective sexual feeling (frigidity) are caused by a variety of bodily diseases or morbid conditions, or anatomical defects.

* Similar effects are produced in men ; psychic influences and impression may disturb or destroy potency and thus prevent parenthood.

† A word used by *Havelock Ellis* to denote a particular pitch or *timbre* of nervous reaction.—(Tr.'s Note.)

This register of possibilities includes :—

(1) Local genital conditions, such as deformity of the pelvic floor and perineum, owing to hypoplasia or defective development, which decreases both erotic inclination and specific aptitude ; by deformity of the vagina, whether by too great width and capacity or extreme smallness or tightness, or by relative phallic insufficiency of the man, or by his awkwardness, shyness or roughness, or by the effects of immoderate self-relief.

(2) Sexual sensation may also be impaired by morbid conditions of the endocrine glands (suprarenal capsules, thyroid, etc.) ; by exhausting diseases (such as anæmia) ; by chronic alcohol, nicotine, morphia and cocaine poisoning, which may lead to thorough dislocation of the whole sex function.

(3) Many cases are, however, of entirely psychic, or emotional, causation ; they are founded on conjugal disharmonies, aversion or even abhorrence for the marriage partner ; fear of pain in an act which is repulsive, if coarsely and clumsily performed and reluctantly endured ; and fear of possible pregnancy from that act. Or hysteria and masked bisexuality (the capacity for desire towards both their own sex and the other) may inhibit voluptuous feeling and effectually prevent conception. The technical term for *lack of specific satisfaction* in actual sexual intercourse is *Dyspareunia*, and we can trace the rôle of the psyche and emotions in such dyspareunia and of the dyspareunia in determining sterility, *when a change of partners brings normal pleasure and pregnancy*. Dyspareunia and sterility in marital intercourse, rapture and pregnancy in union with her lover, are far from rare experiences among women.

Dyspareunia is specially likely to prevent conception when it accompanies such symptoms as uterine flexions or versions, cervical deformities, shortening of the *ligamenta lata*, which support the womb and lacerations of the *os uteri*.*

Other important causes or cures for dyspareunia are the precise manner of the woman's initiation to intercourse,†

* See Appendix III. to the present Chapter.
† See " Ideal Marriage," Chapter XIII.

and the experiences which she may have had previously, whether solitary or *à deux*. Certain categories and groups of girls in modern city life have a cult and habit of homosexual relationships.

But the husband himself can inflict by far the most serious injury on his inexperienced bride, if he is brutal in first full intercourse (always a crucial point), or regardless of the girl's modesty, or lacking in certain further delicacies of conduct or sentiment. The woman may develop unconquerable aversion from coitus and for her husband generally; and simultaneously, she may become unable to conceive. As I have repeatedly emphasized * *the majority of women reach the supreme sensation gradually*. They need a congenial emotional atmosphere, attention, persuasion, caresses, the prelude and its slow accumulation of stimuli. Any man, however vehement his desire, who disregards these laws of his mate's being and tries to attain his paradise by main force, is guilty of a *cruel and senseless outrage*, and has no right to indignation if the violated wife reacts by dyspareunia, sterility and deep hatred.

Cases of frigidity inducing sterility, but itself artificially produced by immoderate ipsation, are more complex.†

We must distinguish two sexual types among women as regards orgasm ‡; those in whom the clitoris is more acutely and swiftly susceptible, and those in whom sensation is more definitely concentrated within the vagina.[91] This diversity is, to some extent—though not wholly—dependent on premarital sexual experiences and habits. Women who are novices in these matters generally become vaginally sensitive, in a happy marriage, though after very varying durations of practice; and *granted, of course, that there are neither gross*

* See "Ideal Marriage," *passim*.

† See Appendix IV. to the present Chapter.

‡ "The sensations caused by stimulation of the vagina are quite distinctive and dissimilar from those due to stimulation of the clitoris. In both cases there is pleasure, or voluptas. But the sensations differ as much between themselves as the flavour and aroma of two fine kinds of wine—or the chromatic glories and subtleties of two quite separate colour schemes. And even the orgasms induced by clitoridal or vaginal stimulation respectively are curiously, though not widely, *different*, although the internal mechanism, the reflexes, the local and cerebral discharges, and the ensuing relief may be equal and identical."—"Ideal Marriage," p. 180.

anatomical disparities between the partners, failures of potency, nor of technique on their husband's part, they are unlikely to become totally or mainly incapable of orgasm since there are the two possible channels of sensation—internal and external—vaginal and clitoridal, and the clitoris may and should be stimulated with proper variety and mastery of technique in coitus.* But if a habit of frequent clitoridal friction and masturbation has been formed before the sensation of pleasure could be experienced within the vagina, the *voluptas* may have become so concentrated on the clitoris that the contact of phallos and vagina may fail to rouse orgasm or even acute pleasure. An analogous symptom in men is diminished sensation in normal intercourse, owing to habitual manipulations which have deadened their reactions, and often lead to disorders of potency.

Thus excessive self-relief may indirectly cause sterility through dyspareunia.

At the opposite pole to frigidity we find the so-called hyperasthæsia of abnormally strong sexual impulse. In some women of this type there is facility rather than intensity, so that relatively slight bodily or psychic stimuli suffice to inflame desire. But this facility may be combined with such intensity and general nervous instability, that the psychic peculiarity is obviously re-enforced by serious unbalance of the internal secretions (endocrines), sufficient in itself to cause sterility.

The absolute or relative sterility of the nymphomaniac may be also due to luetic (syphilitic) or gonorrheal infections, easily contracted in promiscuous intercourse.

Another complete hindrance to conception is *Vaginismus :* a *convulsive cramp of the musculature of the vagina, that refuses all admittance to the male organ.* The sexually tepid or frigid woman does not *participate* in coitus, but she is passive, she does not resist ; but, in the woman who suffers from *vaginismus* the genital apparatus simply will not work : it *closes.* This painful phenomenon may have either anatomical or mental causes—in the latter case the basis

* See " Ideal Marriage," Chapter XI.

is generally an anxiety neurosis. But there may be a combination of dread, fear and pain: the anxiety neurosis may have been provoked by injuries and minute lacerations at the introitus which, during coitus, are extremely painful,* and cause reluctance for further such experience and reflex spasm of the sensitive organs. The purely psychical *vaginismus* which evolves on the lines "*I will not*," "*I do not wish to*," "*I must not*"—(*Stekel* [92]) has generally arisen from some hurt inflicted on the woman's affection, modesty or pride by some profoundly unpleasant experience; and it is to be feared that the most frequent factors in such an experience are male brutality or lack of dexterity. Again, defective virility, or lack of respect shown to the woman's mother (or to someone or something with which she identifies herself), or a psychic tie between the woman and another man may produce it, or religious fanaticism, imperfect knowledge of and vulgar prejudice against sexual things, self-reproach and "sense of sin" for premarital intercourse or relationships, or simple aversion from an unsympathetic and fundamentally alien personality, or from the male in general.

A. Mayer [93] has expressed himself drastically, but not unjustly, as follows: "A man who whistles for his wife as he would to his dog, or who expresses his thanks for her consent and the pleasure of her body, by 'lighting up' a cigarette immediately after intercourse—has no right to be surprised if the woman's outraged dignity and personality defend themselves by bodily obstacles and pains, *i.e., Vaginismus.*" In such circumstances we might term *vaginismus* a reflex action, a *convulsive memory*. *Walthard* [94] has given detailed comments on its anatomical mechanism, but the consideration of this subject is not relevant here. We may merely point out that *vaginismus* makes fertilization, or even coitus, impossible, for the slightest *approach* of the male organ even before any *contact* with the vulva, causes the *introitus* to contract so tightly that the thighs close as well.

* See "Ideal Marriage," pp. 61–62, on the need for proper surgical care and attention after child-birth, to avoid these distressing injuries.—(Tr.'s Note.)

There is also an interesting relationship and interaction between sterility and imaginary pregnancy (which *Charcot* termed *grossesse nerveuse*). The latter phenomenon occurs among subhuman creatures as well.*

We must now consider *Constitutional* causes of sterility, or factors in sterility. They may act by hindrance to the formation of ova, or to their transit through the genital tract, or to impregnation.

The most far-reaching in their interactions are abnormalities of endocrine secretion. These continually influence ovarian activity; and we shall not be surprised that infertility is almost regular in cases of *pituitary, adrenal, thymus* and *thyroid* disturbance.

But, in practical life, the most important constitutional anomalies are *Infantilism* (or under-development, *i.e.*, arrested growth of the whole body) and *Hypoplasia* (genital infantilism). We may also use the term *Infantilism* for both general and genital arrested development or deficiency. The term explains itself.

When the Infantilism is specially *genital*, it may affect the external organs: labia, vulva, clitoris; or the internal: vagina, uterus, tubes and ovaries; or they may all be defective, or some may be normally developed, and others infantile. The uterus may be approximately normal, but the ovaries dwarfed and not functional; or, again, active and adequate ovaries may be combined with an infantile uterus. Or vulva and clitoris may be finely formed and the internal organs shrivelled, or *vice versa*. Thus, genital infantilism is a highly varied and *idiosyncratic* condition, and its mechanisms in preventing or handicapping pregnancy are correspondingly numerous.

They may make the upward movement of spermatozoa difficult; abnormally thin and narrow oviducts may be so twisted that the passage of the ova is appreciably hindered; the tendril surrounded mouth of the tube may be unable to capture and absorb the ova; the ovaries may be inadequate to proper maturation and ovulation, or the uterus and its

* See Appendix V. to this Chapter.

epithelial membrane (endometrium) may be unable to retain and nourish the fertilized ovum, which passes out of the body in early and spontaneous miscarriage.

I would, further, recall my observations in the second volume of this series, on the sterility of certain women whose fathers were syphilitic ; the daughters showed no hereditary (tertiary) symptoms, but they were barren of offspring. A casual diagnosis would attribute this condition to a certain infantilism of the genitalia, and especially the uterus which was almost typical, but the clue to this anomaly must have been gametic, *for even after appropriate treatment had expanded and developed the uterus to normal dimensions, sterility persisted* ; and such is not the case where there has been no prenatal toxic influence. The infections of the fathers of these patients were of very old date ; they had been incurred before marriage, yet, in their later years, there were symptoms which must have been connected with the early syphilis.

Infantilism, however caused, is of serious unfavourable significance for possible motherhood. It is the most frequent of the constitutional anomalies which hinder or prevent reproduction. And it is often not detected, or even suspected, because of the extreme diversity of its forms, and because the general physique often gives no clue to this hidden danger and defect.

General morbid conditions promoting sterility are principally those of chlorosis (which is steadily diminishing, curiously enough,) excessive obesity, diabetes and tuberculosis. These diseases operate by disturbing or stopping the formation of the Graafian follicles and the process of ovulation, *i.e.*, they attack the very source of reproduction.

Finally, we must consider the anatomical causes of sterility ; and these include many local lesions and morbid conditions of the genitalia.

All diseases or injuries of and to the introitus and the vagina itself, may be occasions of sterility. These include tumours or malignant growths, scars, imperfectly healed

perineal lacerations,* imperforate hymen or abnormally thick hymenal membrane and narrow orifice; excessive narrowness or shortness, or, again, breadth and slackness of the vagina. Or the difficulty may arise from malformations of the *portio vaginalis* and the cervix; they may lie sideways in the *fornix*, or be so short and rudimentary that they do not become *immersed* in the seminal fluid (see Plate X, No. 16). Degenerative conditions and malformations of the *os uteri*, lacerations or cysts, may also result in temporary or absolute sterility.

The special consistence and condition of the epithelial intrauterine membrane and its secretions are also important. Vaginitis (inflammations of the vagina) with purulent secretions and discharges kill the spermatozoa, or entangle them and retard fertilization. Stock-breeders and veterinary surgeons know that mares who suffer from vaginal catarrhs are useless for stud purposes.

Spermatozoa are naturally adapted to alkaline secretions; their motility depends mainly on the chemical composition of their fluid medium. Thus, any appreciable extra *acidity* of the secretions damages the sperms and handicaps fertilization. *This is of primary importance in contraceptive technique.* The vaginal secretions are unfavourably affected, not only in all inflammatory conditions of uterus, cervix and vagina, but also in ovarian unbalance, through infantilism and chlorosis.

Malformations and inflammations of the uterus itself are also extremely important. Catarrhs, inflammations and polypi may absolutely prevent conception. *The most frequent strictly uterine condition causing sterility is gonorrheal endometritis.—Other forms of uterine inflammation are comparatively mild and trivial in this respect.*

It will be obvious that an inflamed endometrium, with a considerable purulent secretion, is inappropriate as a nest for the fertilized ovum, which is dislodged and destroyed by the acrid and morbid discharge.

There may also be uterine lesions without the typical symptoms of inflammation, and disturbances of the normal

* See " Ideal Marriage," pp. 61–62.

cycle, so that menstruation is irregular in date. Of course, these symptoms point to ovarian anomalies, and equally hinder "implantation."

Sellheim [95] believes that these morbid phenomena in the uterine lining are the cause of infertility in two groups of case; (1) In those women who have remained virgins too long and in whom the organs have atrophied and become inept, when at last they are called upon for reproduction in marriage; and (2) In the women who have used certain contraceptives habitually over a number of years.

Both these conditions—prolonged barren passivity, and the continual cyclic preparations and sloughing of the epithelial membrane in childless intercourse, would be apt to cause abnormal changes in the uterine lining and permanent sterility.

There is also the anatomical hindrance of an exceptionally small and tight uterine orifice (*os externum uteri*), but this particular malformation does not seem to have quite the importance formerly attributed to it, as it is generally accompanied by further symptoms definitely indicating sterility, *e.g.*, infantilism, asthenia, intersexuality.

Of course the complete closing of the cervix is absolutely a bar to conception. It is generally the result of profound and serious inflammations following on injuries—whether instrumental or chemical—and unskilled interference.*

But even more important than uterine injuries or inflammations, are those of the oviducts or Fallopian tubes (also known as salpinges, or trumpets, from their shape)—for a severe salpingitis closes the delicate structure of the slender duct and prevents the ovum from reaching the uterus, and the sperm from entering the tube. *All forms of inflammation of the genital tract and the* ADNEXA *or adjacent organs—peritoneum, colon, bladder and vermiform appendix—may ascend or extend to the tubes and close them,* whether the particular inflammatory secretions be catarrhal or purulent in consistency and whether their origin be tubercular,

* See Appendix VI. to this Chapter.

gonorrheal or septic. The peritoneum, or lining of the abdominal cavity is generally involved in salpingitis, and the oviduct is either completely closed (by "adhesion") or so distorted that it becomes impassable.

Even in less serious cases, when the tube is not completely closed, the extremely sensitive epithelial membrane, which wafts the ovum towards the womb, is injured and the tubes are bent and twisted. Should a spermatozoön pass the outer genital tract and meet an ovum in the tube, the narrowed and distorted duct prevents the fertilized cell from reaching the womb; it has to remain in the oviduct, and this means the dangerous and often fatal abnormality of ectopic or tubal pregnancy.

The two chief causes of salpingitis are, first, septic infections in or after childbirth (puerperal sepsis) or in and after miscarriages; and secondly, gonorrhea. They can destroy potential fertility either before or after the first child is conceived or born.*

Septic salpingitis, leading to adhesions of the wider (abdominal) extremity of the tubes, is sometimes found in maiden girls, through inflammatory conditions which have extended from the vermiform appendix, or the upper intestine, and involved the genitalia. These wide and complicated inflammations may lead to sterility. The same is the case with inflammation of tubercular origin. And both mumps and influenza may lead to tubal complications and adhesions which close the oviducts. Finally, we must not forget the possible results of lack of great care and cleanliness during menstruation! Bacillus coli, Bacillus mesentericus and other bacterial inhabitants of the lower bowel have been found by me in some cases of tubal adhesion and salpingitis in virgins.

Thus there are many possible malign agents here. But two are specially fatal and active: gonorrhea and puerperal sepsis, or sepsis following unskilled and uncleanly abortion.

In the initial "acute" stage of gonorrhea, when the infection has not ascended beyond the cervix, the possibility of conception is much diminished, owing to the effect of the

* See Appendix VII. to this Chapter.

typical acrid and purulent gonorrheal discharge on the spermatozoa ; and the same is the case, of course, when the uterine lining has been involved. Conception may, however, become possible again in the chronic or latent stage, when the characteristic symptoms have abated. But—both where there remains a slight discharge and where there is endometritis though the presence of gonococci is no longer traceable—the likelihood of " implantation " is very small, and sterility must be expected for many years. If impregnation does occur, the ovum is easily dislodged and gestation terminates by early spontaneous miscarriages. As *Seitz* [96] remarks : if they are neither due to syphilis nor to infantilism, they may generally be attributed to the results of gonorrhea.

Thus, while gonorrheal infections of the uterus are a *conditional* cause of sterility, this result becomes *almost certain if the gonococci invade oviducts and the peritoneum.* A few isolated cases of successful pregnancy to term, after the slow subsidence of prolonged bilateral * salpingitis and ovaritis, are the striking exceptions which only emphasize the rule.

The gonococci extend their ravages to the oviduct, under the special conditions of menstruation,† or as a result of alcoholic or venereal excesses ; or after a normal delivery or a miscarriage (independent of possible septic complications). All these circumstances may " light up " an old infection, restore its virulence.

In married women the most frequent occasion of this " flare " is in child-bed and after delivery. The original infection may have been acquired during the pregnancy or some years beforehand. The resultant sterility is termed secondary ; many cases of one-child families are due to this secondary sterility and its practical implications are much more serious than those of " primary " sterility.

We have perhaps sufficiently shown the gravity of gonorrhea in adult child-bearing women, and its ravages on reproduction.

* That is when the tubes and ovaries are affected on both sides.—(Tr.'s Note.)

† See " Ideal Marriage," pp. 291–297.

We must, however, also touch on the existence and sequelæ of gonorrheal infection transmitted to young children, either by genital contacts or personal uncleanliness. The sequelæ may be very serious and operate years after the first infection. As a rule, children who have been infected genitally, have gonorrhea of the vulva, vagina, urethra and rectum, and, at puberty, the gonococci are often destroyed by a sort of auto-immunization of the whole organism. On the other hand, they may be reactivated by the onset of menstruation, ascend and sterilize, as in adult cases (see *Vogt*,[97] *Herschan*,[98] *Fränkel*,[99] *Van de Velde* [100]).

Finally, we must mention conditions peculiar to the female gonads (the ovaries), which may cause sterility at its source.

Inflammation of the ovaries may destroy the precious specialized epithelial cells, from which the follicles are evolved. If no mature and functional ova, or no normal unripe ova, or no ova at all are extruded, it is obvious that they cannot be fertilized. * Moreover, there may be serious complications, malformations or " encapsulations " of the ovaries, owing to peritonitis or salpingitis, and these adhesions prevent the ovum from entering the tube, even if the Graafian follicles are still functioning.

Not only follicular, but also luteal anomalies may cause sterility. There is a condition of abnormally prolonged luteal duration (" Corpus Luteum persistans ") which has this effect ; there are also luteal or ovarian cysts (*Halban*,[101] *Fränkel* [102]) which inhibit the development of fresh follicles and ovulation.

To recapitulate the varied material of this chapter, we may say that *there are more avoidable causes of feminine sterility than there are inevitable causes*. The chief inevitable causes are infantilism and other congenital anomalies ; the chief preventible agents are gonorrhea, whether in the man or the woman, and sepsis.

Infantilism, moreover, is not always present in its *extreme* form, but may often be successfully modified by skilled

* See Appendix VIII. to this Chapter.

treatment if its existence is diagnosed early enough. The same is true of some other abnormalities.

Therefore we may be optimistic to the extent of knowing that, generally speaking, *positive remedial* measures are quite possible for sterility in women.

But here, as everywhere, prevention is better than cure. Both partners—nay, all adults, all educated and responsible persons, should know *what* are the causes of infertility and *how* they operate.

And so we return to our preliminary statement of the *great significance and value of accurate knowledge*, for the happiness of husband and wife and for the harmony and stability of their union.

APPENDICES TO CHAPTER VI

I. The Reproductive Significance of Vitamine E.

This subject has recently been emphasized in various quarters.

Vitamine E is found not only in vegetable products, but also in substances of animal origin such as : yolk of egg, calves' liver and certain muscles and cerebral portions of the same species of animals. But Vitamine E is destroyed by the process of cooking.

" Raw flesh food is generally felt to be incompatible with our civilization. But there are many civilized persons who prefer it. Does this taste spring from some obscure working of the urge to preserve the race, through an extra supply of Vitamine E ? "

(After *James J. Walsh*, quoted by *J. G. Sleeswijk*.)

II. Industrial and Vocational Injuries to Women's Organism.

Among the many deleterious influences of city life are the usual conditions under which women work for wages in factories, offices and shops : the damage inflicted may be *general*, and thus involving the gonads, or directly affect the reproductive organs. Too much standing still, sitting or stooping down, is bad for the pelvis. Max Hirsch [103] gives special weight to bad air, insufficient ventilation and absorption of dust, fluff and chemical products in overcrowded rooms. These can cause anæmia, chlorosis and tuberculosis, all of which *atrophy* (or shrivel) the follicles. Hard bodily work throughout pregnancy predisposes to miscarriage.

The number of abortions caused by Lead, exceeds that caused by syphilis; lead poisoning of this kind (plumbism) often occurs in various forms of work with metals, such as in the Printing, Pottery, Straw-hat bleaching and Glass Trades. The Tobacco factories also supply a high number of abortions.

We may also refer to work with mercury (looking-glass industry) and chronic saturation with sulphocarbolate, as in the manufacture of certain rubber goods. The latter poison may completely atrophy the ovaries.

Violent and continuous bodily shocks and vibrations are particularly unfavourable to reproduction, as in the cases of professional acrobats and dancers. "Snake dancers" are said to be entirely unable to conceive.

These vocational injuries act the more seriously as they act the more early in life and on the immature girl. Girls at puberty may be so injured by vocational and industrial shocks and toxins that they cannot, later in life, become mothers, as their ovaries have ceased to function reproductively.

III. Uterine Retroflexion as a Cause of Sterility.

Retroflexio uteri is the *bending backwards* of the uterus.* *In itself*, this condition is less often the cause of sterility than is usually supposed. But the changes in the circulation of blood through the genital organs, which sometimes accompany retroflexion, the altered angle of the oviducts and the frequent catarrhs,† may hinder fertilization or impregnation. Retroflexion is most commonly found in women who have already borne children, or at least experienced one or more miscarriages. If Retroflexion is inherent, and independent of pregnancies and deliveries, it is generally due to a slight degree of arrested development, which is unfavourable to conception. Other forms of genital abnormality are the insufficient length of the uterine ligaments (broad ligaments)—which may also be caused by subsequent inflammation—and acute *anteflexion*, which strongly accentuates the normal angle of the womb, which is directed forwards (while the vagina slopes upwards and *backwards* from introitus to fornix). In these cases also, pregnancy occurs less easily. Acute anteflexion is sometimes accompanied by an almost *conical* structure of the uterus, and an abnormally long pointed *portio* which projects into the vagina, and terminates in an unusually narrow *os*. In such cases, insemination is as unlikely or even impossible, as absorption of the semen when deposited

* See Plates I., VIII. and X.

† Catarrhal or even purulent uterine discharges are not always gonococcal in origin, but should always be the occasion for professional advice and special care.—(Tr.'s Note.)

in the *receptaculum* or *fornix ;* and, of course, access to the cervix is made even more difficult for spermatozoa. In general, we must bear in mind that *all* anomalies in the angle and position of the uterus—especially retroflexion—do not tend towards either insemination or absorption from the fornix ; and so we must allow for this circumstance in the technique of coitus.

Actual lacerations of the *os uteri* generally occur only in giving birth, or in operative interference for the termination of pregnancy or evacuation of a dead child. Infertility resultant from such tears is often " secondary," *i.e.*, there is only one child. Lacerations of the *os* do not absolutely prevent conception ; but they are obstacles, because of the discharges which accompany them.

In short, uterine anomalies—with the possible exception of conic malformation of the *portio*—are not, as a rule, sufficient to cause sterility, but tend thereto when there is also habitual dyspareunia.

IV. The Term and Concept of " Masturbation."

I prefer to use the words " Masturbation " or " *Ipsation* "—which latter, however, is not understood by the majority—for sexual self-relief or self-gratification, rather than to perpetuate the incorrect use of " Onanism."

The " Sin of Onan " had nothing to do with self-gratification. Nevertheless, the term " Onanism " has obtained such currency in that sense that it is not always possible to avoid its use.

By " Masturbation " we denote genital excitation and relief of tension, without the co-operation of another person. We do not discuss " mutual masturbation "—*i.e.*, mutual digital stimulation and caresses—in this treatise.

And it should be borne in mind that only *excessive, frequent and habitual solitary self-gratification* can be the cause of the manifestations we have described. Occasional and/or mutual masturbation are innocuous.

V. Simulated Pregnancy in Human Beings and the Animal World.

The creatures most liable to this curious manifestation are doe hares and rabbits, bitches, mares, she-goats and sows. They can show all the outward symptoms of gestation, and behave as though they were about to bring forth. Their ovaries form *corpora lutea*, whose secretions influence their nerves and brains.

Women in whom the state of simulated pregnancy generally expresses a profound wish-fulfilment, grow stouter and fuller, especially in the abdomen and breasts ; their periods cease for months, and they even believe they have felt the " quickening "

movements of their child. These symptoms may occur in childless women, and also in those who have had girl children, while both they and their husbands fervently desire a son. The process of necessary disillusionment by their doctors is very painful, alike tragic and grotesque.

VI. Acquired Uterine Lesions as Causes of Barrenness.

Malformations and occlusions of the uterine cavity have often been ascribed to previous evacuations and curettages, in which the cervix has been injured by too vigorous manipulation, and scars have formed. There is special risk of such injuries in unskilled interference with pregnancy. Repeated curettages may destroy the epithelium and make " implantation " impossible.

Another hindrance to fertilization is the formation of myomata or polypi which block the cervix.

The influence of myomata on infertility is curious, and still mysterious. We know, of course, that women suffering from myomata are generally childless, but not always so. Is it not possible that both the growth and the sterility arise from some cause connected with abnormalities of the ovaries ?

Another morbid uterine condition deserves mention, for it is also connected with ovarian anomalies ; I refer to *non-malignant Metritis*, changes in the musculature of the womb, owing to excessive congestion. Continuous coitus interruptus and excessive masturbation may have this result.

VII. Abortion and Sterility.

Septic conditions of the tubes, finally involving the ovaries as well, are generally the result of unskilled and blundering abortions. We know that, during the last fifteen years, the number of abortions or attempts at abortion among married women of all social classes has enormously increased.[104] As the attempts are generally made with dangerous implements, and by unskilled persons, infections and inflammations are the frequent results. *Peham* [105] is in accord with many other authorities in believing that most of these interferences are intentional (90 per cent.) and demand a yearly holocaust of women in their prime who either die or become invalids for life owing to violent salpingitis and peritonitis. Or, if not invalided, they are sterilized, for one miscarriage, if there are inflammatory complications, can close the oviducts.

VIII. Ovarian Causes of Sterility.

We must distinguish between *Anovuly*—in which *no* ova are formed—and *Dysovuly*—in which follicles and ova are not functionally normal.

Anovuly is very rare, and only occurs in conjunction with acute genital malformations and tumours of the pancreas or spleen.

Dysovuly is much more important in practice. It may be caused by inflammations, endocrine unbalance and general constitutional conditions ; the ova are formed and extruded, but they are not normal or fully functional. A typical example of ovarian inadequacy is the hypoplasia (arrested development), which we find in some cases of infantilism.

CHAPTER VII

STERILITY IN WOMEN

PART II

Its Prevention and Treatment

THE main preventive measures against feminine sterility may be deduced from the exact knowledge of its possible causes.

Prophylaxis must be *prompt* in these cases if it is to be effectual. We assume, of course, that no congenital anomalies, such as obliterated vagina or upper genital tract, nor structural bisexuality (hermaphroditism) have completely ruled out the possibility of conception!

Among the most important indications for early treatment are the congenital disturbances of the function of menstruation, which become evident at and immediately after puberty. We cannot deal here with the special hygiene of puberty, but stress must be laid on the need of *strict and habitual bodily cleanliness;* its neglect may inflict permanent damage both on general health and genital function. Yet this necessary cleanliness during and after menstruation is often sadly neglected. Another menstrual pitfall is immoderate exertion during the period, especially in games and athletics; often accompanied by exposure to severe chills, such as may occur after jumping, running, skating, dancing and riding. These may all lead to genital catarrhs, which cause serious internal inflammations, and hence, sterility. Insufficient and badly balanced food, together with mental or physical overstrain, may lead also to general debility, which affects the ovaries and the reproductive system for years ahead. Parents and medical advisers are all too often careless of these risks. Chlorosis and tuberculosis are both diseases which are severely aggravated by continuous hard

industrial or vocational effort, but are favourably diminished by suitable diet and change of occupation.

The main lines of prophylactic effort, however, lie in the directions of dealing both with miscarriages and venereal diseases and must also include early diagnosis and treatment of infantilism, or arrested development of the genital organs.

The prevalence of infantilism seems to accompany—if not to arise from—the conditions of closely packed urban life

An exclusively mental culture, one-sided intellectual activity, unsuitable food, constant motor exertion and nervous stimulation tend towards a type of woman which is not fully developed internally or externally, and which uses up such an amount of nervous energy—often in the mere ABC of living, without much definite result—that their reproductive functions automatically dwindle. This general and genital bodily inadequacy is bequeathed—in the same exacting environment—to the next generation, and tends towards a human and feminine type which is prematurely exhausted, and often unable to conceive or carry to term.

We shall deal in greater detail with the prevention of venereal diseases in our next chapter. *But medical consultation and inspection before marriage is a most urgent need.*

Men who believe themselves to have completely recovered from a former gonorrheal infection should never think of marriage until they have been thoroughly examined—both in order to establish their freedom from gonococci and their generative potency. And the same is, of course, true in cases of previous syphilis, *mutatis mutandis.*

For any man of common honesty or decency of feeling, this obligation is obvious and fundamental. But even an utter egotist may well reflect that another course of conduct not only exposes his wife and possible children to disease, but involves himself in so much unpleasantness and responsibility that, from purely self-regarding motives, humane and honest behaviour is most profitable in the end. And as, nowadays, it is by no means rare to find that women have been infected before marriage—and in classes where

this was almost unknown a generation ago—this obligation to ascertain the facts about their state of health before marriage is *quite as incumbent on them as on men.*

The means best calculated to save both man and woman from painful surprises in this and other matters of health, are, in themselves, an important social problem. It has already collected a considerable bibliography and efforts have been made, both communal and by private persons and associations, to solve it, and suggestions made towards its codification. I am of the opinion that such results are reserved for the future and that all we can do now is to prepare the way by incessant discussion and education. The re-enforcement and elevation and extension of the sense of responsibility in every individual are better guarantees than any number of certificates and testimonials.

I have already dealt with the advisability of an exchange of pre-marital certificates as to fitness; and need not repeat myself here. But we must not forget that what is right and wise in the case of some couples has no relevance for others. The main point is a thorough examination and expert opinion *before* the decision to propose or accept marriage is taken; and special attention to fitness for parenthood. This, of course, must involve medical knowledge and resource. The medical practitioner would reasonably concentrate his attention mainly on possible venereal infection or venereal sequelæ, and on the *adequate and proportionate structure* of the genital organs. Such medical inspection demands wide experience and strict exactitude, and those who invite and submit to it will do well to give all assistance in their power.

Sterility may further be obviated if both partners understand what they must (*a*) expect, (*b*) avoid, and (*c*) aim at, during first intercourse. We have already, on several occasions, emphasized the danger of positive brutality or lack of dexterity on the man's side, and its possible results in impairing or preventing fertility; and, we have specially stressed the need for care and consideration in approaching a virgin, who has neither the knowledge nor the adaptability

of experience, and *may be so repelled and injured that dyspareunia or vaginismus result.*

The " wedding journey " or " honeymoon trip," so tenaciously commanded by custom, is often very deleterious to the bride, whose sensitive organs are frequently in constant demand and thus congested and irritated. Moreover, they are exposed to the vibration of long railway journeys, as well as walking tours and risk of chills. Too often the result is vaginitis, cervical catarrh, neglect and permanent leucorrhea and weakness.

When pregnancy is first established, another crucial stage has been reached. Many cases of secondary infertility (one-child sterility) might be prevented by proper care, both before and during the puerperium. Early interruption of pregnancy may inhibit any later births ; *a miscarriage needs as much care as a full-time delivery.* We may also again emphasize the perils of unskilled and illegal interference.

Sexual intercourse should be *carefully timed and performed*, if miscarriages and premature labour are to be ruled out. For normal women, a gentle and skilful sexual communion is harmless at such times ; but a rough or wild *invasion* may easily lead to hæmorrhages and expulsion. Many women have a constitutional tendency to miscarry ; this is often the case where there is infantilism, especially infantile uterus. *There is special risk of such accidents during the days when—in the non-pregnant state—menstruation would fall due.* Thirty years ago the great French specialist *Pinard* pointed out this risk, and his conclusions, and the measures he based thereon, have been followed and corroborated by all obstetricians who have studied them since.

Coitus during the four or six weeks before birth is due, or immediately after recovery from child birth, requires the greatest gentleness and cleanliness, if it is not to endanger the woman's health and her future motherhood. I consider it a mistake to abstain from intercourse for *months both before and after birth;* but both mechanical overstrain, laceration and contagion with bacteria are to be carefully

avoided, as they are all very liable to occur and very perilous at such times.*

Whether the particularly perilous contagion by pathogenic organisms occurs through the manipulations of the woman herself, or the persons in charge of her, or through the intromittent male organ—all these possibilities should be obviated by the most careful cleanliness in childbed; for puerperal fever not only leads to grave inflammations of tubes and ovaries, but may—and often does—end fatally.†

Before we can effectually treat a woman for sterility, we must be sure that the sterility is hers, and not due to disease or defect in her partner.

In investigating the woman's case, we must particularly consider:—

(1) The formation and production of the essential female cells or ova. Is this function normal? If not, is the defect inherent or due to inflammations of ovaries and tubes?

(2) Is the uterus adequate, in size, structure and muscular tensity for the nourishment and protection of the embryo?

(3) Are there insuperable obstacles to the merging of sperm and ovum?

(4) Is there impaired or inhibited sexual sensation? If so, what is its psychic trauma?

(5) Are there technical faults in coitus or in the choice of its times and seasons?

All these factors must be studied before the medical adviser can begin to treat feminine sterility. And even if he has attained complete assurance on these, it would be a grave psychological and technical error to pull all the strings of gynecological therapy at once. A certain period of observation is very helpful in such cases; for all definite treatments have certain drawbacks as well as advantages. In the case of very young women of somewhat anæmic or infantile constitution, a conception is often brought about without special treatment, as marriage promotes general

* See "Ideal Marriage," pp. 289–309.

† See Report of Departmental (Medical) Committee on Maternal Mortality (Great Britain), 1930.—Tr.'s Note.)

vigour and genital expansion. Or, again, very frequent intercourse may have caused a *supersaturation of the woman's organism* with seminal substances, and therefore an immunity, which disappears after a pause and rest—which is sometimes occasioned by a separation of the partners for a few months.

In very pronounced congenital anomalies, such as extreme infantilism or obesity, or glandular unbalance, all methods are bound to fail. The defective or strongly variant organism protects itself from the ordeals of pregnancy, to which it would succumb. But such cases are relatively rare; and women of such pronounced abnormality rarely marry. Generally, the congenital abnormalities are much slighter, but have only become evident in the course of married life; and there is, accordingly, justifiable hope of healing—but *healing only, if both the woman and her husband will be patient and steadfast!* Both general tonics and nutritious foods and special sexual stimulants are indicated; plenty of fresh air, regular habits, change of scene, moderate exercise, sea or mountain air, games, gymnastics, medicinal baths, iron and arsenic tonics and organotherapy.

But the games and gymnastics must not be overdone; excessive exercise and inappropriate choice in exercise do more harm than good. I have seen cases of both general and cardiac overstrain, which persisted for years in young girls who were not equal to the demands of frequent and vigorous hockey matches, but who insisted on taking part. When games and athletics have been recommended as tonics in general weakness, they should be most carefully regulated, for weak and anæmic people have subnormal cardiac capacity.

The same moderation should be observed in walking, and even in mental work. Nor should the mountain air be too stimulating, or the height above the sea too great; nor should the changes of domicile and environment be too abrupt. To-day, when life is a race with Time ever in pursuit, and means of locomotion so numerous, the need for repose is entirely forgotten.

Medicinal baths and sea bathing should be chosen with

care.* A fashionable crowd and high prices are worthless curative agents for general or genital debility. And the physician should supervise the progress of these cures.†

Organotherapy is based on our knowledge of the functions and products of the ductless (or endocrine) glands. It supplements deficient, disturbed and atrophied function of any gland and reactivates the gland at the same time. The best known glandular preparations are the ovarian and follicular compounds: Ovoglandol and Menformon; the thyroidal, Thyreoidin and Thyroxin; the adrenal Adrenalin and the various pituitary preparations. The most promising results so far appear to be those due to Menformon (*Laqueur, Zondek* and *Aschheim*) and the frontal pituitary lobe hormonic preparation, Prolan ‡ (*Zondek* [108]).

We have also blends and combinations of various endocrine secretions, or of endocrine secretions with other substances. Thus *Iwan Bloch* used a preparation entitled Thelygan, combined of ovarian, thyroid and pituitary hormones, calcium and the vegetable extract Yohimbin. A blend of hormones and iron is also popular, and is prescribed as a stimulant and activator of the genital apparatus (Ovaradentriferrin).

Various authorities prescribe weak dosages of Röntgen rays as a cure for disturbances of the ovarian cycle, and the resultant sterility. They maintain that judicious röntgenization stimulates the production of functional follicles and corpora lutea, active ovulation, and that

* Among medicinal baths, the best are mineral springs and peat baths. A well regulated course of such baths, based on adequate diagnosis, can cure long standing infertility. We do not know the exact mechanism of these springs. They are doubtless general tonics, but they may also help to disperse obstacles which have occluded the tubes.

† A final word on homœpathy in this connection. Until a few years ago it was ignored in German medical literature. But *Richard Haehl*, [107] who has had encouraging results in the homœpathic treatment of sterility, has elucidated the point of view and method in a very readable and valuable book. But, in all probability, here, too, as in so many unrecognized types of healing, the skill and insight of the practitioner are more important than the special rules by which he works.

‡ Prolan is probably destined to play the lead here, but the clinical tests of this compound have not yet furnished decisive results.

interaction which expands and strengthens an infantile uterus.* Although I cannot deny that röntgenization may have such effects, I cannot recommend it as a means of curing sterility. It is very difficult to ascertain the *exact* dosage required ; there is great individual variation of susceptibility to these rays. Moreover, we definitely *know* that defective, subnormal individuals may evolve from ova which have been damaged by excessive röntgenization. In my opinion, therefore, there are two dangers in using this method. We may inadvertently *over-dose* the patient and irretrievably damage an already defective ovary ; and, on the other hand, if a woman has been helped to become pregnant in this way, the product of conception may have been damaged in the germ.

In cases of genital infantilism in girls between nineteen and twenty-three years (in younger girls, the condition often cures itself at puberty) it is often possible to heal severe conditions of inadequacy, which would certainly have meant sterility in marriage, and to heal them without having recourse to operative surgery, simply by stimulating local and general development. Marriage then completes the restoration to full normality. Three methods are used or alternated : doses of ovarian or other (pluriglandular) preparations ; diathermy (radiant heat) and vibromassage.[109]

I judge that diathermy and hormonic preparations affect the whole genital structure, but that vibromassage (which should be *per rectum*, in order to avoid sexual stimulation) only applies directly to the uterus which, in its turn, involves tubes and ovaries. The results of this treatment are twofold : there is an appreciable and permanent expansion of the uterus, and any prevalent menstrual disturbances are overcome, while general physical growth and vigour improve so much that marriage generally leads to pregnancy. Of course, marriage itself completes the cure ; for, even if the first gestation does not go to term, it so activates and enlarges the uterus that the second or third is entirely successful.

* See Appendix I. to this Chapter.

Uterine displacements, especially retroflexions, can be corrected by means of a ring or uterine pessary* and often this measure alone leads to conception. In my opinion this is because the restoration to normal position has a favourable effect on concommitant conditions and processes (which are often more important than the actual flexion). And the *os uteri* is better able to absorb the sperms than in retroflexion. This is true both of direct insemination and of what we have termed *immersion.*

Even in persistent retroflexion, suitable attitudes in coitus may tend towards direct insemination. The same is true of other uterine displacements. We may suggest, as an instance of adaptation, the supine attitude of extension, with the woman above the man.

As a further example of the technique of coital adjustment, we may cite the advisability of Attitude III † in cases where the posterior vaginal vault is somewhat shallower and flatter than usual and thus fails to act as an effective " Receptaculum Seminalis." But two points must be borne in mind : in all the modifications and variations of Attitude III, great care must be taken to *avoid vehement thrusting in full penetration* and, although it is helpful to raise up the pelvis of the woman by means of cushions, pillows, etc., this is somewhat difficult. The usual prescription for impregnation in cases of shallow fornix : " Horizontal (' normal ') attitude, with raised lumbar region " is inadequate, and is generally wrongly and clumsily carried out.

A possible accessory method is the introduction of substances which have an affinity for spermatozoa ; they must be combined with a glutinous " vehicle " and deposited as far inside the vagina as possible, *e.g.*, by means of a spray. Possible appropriate substances are blood serum, solutions of albumin and glycerine, and weak alkaline solutions, especially in combination with carbonic acid. (There is a 5 to 10 per cent. solution of glucose with caustic potash in the proportion of 1 : 1000 to 1 : 2000.) Such chemical aids

* See Appendix II. to Chapters VII. and VIII.
† See " Ideal Marriage," pp. 218–221.

may be sought specially when the vaginal secretions are too acid for the spermatozoa to move rapidly, or even to survive. Cases of this kind are commoner than is generally supposed. A simpler and easier method of treatment is by vaginal douches of sodium bicarbonate solutions.

If vaginitis or endometritis are the causes of sterility, they must be met by carefully individualized—and generally prolonged and " troublesome "—treatment, which we cannot further consider here.

The important muscles (Ligamenta sacro-uterina, or Retractores uteri),* which suspend the uterus, may become subjected to cramp, or even to inflammation and atrophy. This can result from excessive and prolonged habitual coitus or coitus interruptus, or very frequent masturbatory indulgence; and it is extremely painful and inhibits normal reactions. All such habitual excesses should be abandoned if it is to be treated; and relaxing, analgesic medicaments as papaverin and belladonna (especially Bellafolin) in the form of rectal suppositories are often helpful. Or the muscles may be very carefully stretched by vibromassage, either from the fornix or the rectum. I have seen good results from this method; but, of course, there are powerful psychic factors in such cases.

The typical psycho-sexual causes, or contributory causes, of sterility are peculiarly difficult to treat. The methods include objective instruction and elucidation of difficulties, as well as persuasion, suggestion, psychoanalysis, individual analysis, or even hypnosis. Frigidity, dyspareunia and *Vaginismus* have all been got rid of in various cases by some one or other of the above-mentioned methods; and if a happy and normal sexual life is made possible, pregnancy generally follows. But such treatments should only be undertaken by medical men or women *who have theoretical and practical psycho-therapeutic knowledge.*

In all such cases the advisability of concurrent local treatment should be seriously considered. The decision

* See " Ideal Marriage," Plate III., under Letter E.

should, however, be left to the psycho-therapeutist, as the mind and emotions are the main factors. Of course, it is more convenient in many ways for the patient, if the gynecologist to whom she entrusts her bodily health can also be her psychic healer; but few, as yet, are expert in both fields. The pharmaceutical accessories to such treatments should also not be overlooked. I would particularly recommend preparations of strychnine and phosphorus; and also the use of carbonic acid hip baths. And the husband must be very carefully instructed on the most helpful way to approach and attract his wife.

Even certain forms of *vaginismus* yield to a wise blend of psychic and local treatment. There are various local possibilities; one—the more rapid and effective for patients who are not afraid of operations—is dealt with in our next chapter. But it is also possible to *dilate* the vagina by repeated insertion of *specula* or sounds; these should be preferably of metal and remain *in situ* for at least an hour at a time. *The psychic treatment should be concurrent. Walthard*, to whose work in this field I have often referred, is of opinion that the woman subject to *vaginismus* should thoroughly understand the mechanism of her sufferings, and be able to reason them out and resolve to set them aside. And there should be muscular exercises counteracting the tendency to contractions of the pelvic floor; the diaphragmatic and abdominal muscles should be used actively. *But the root of vaginismus is mainly, and sometimes wholly, emotional and mental. And where it is thus exclusively cerebral it is best to omit local treatment.*

Constitutional liability to miscarriages may also be met by non-surgical methods. The infantile (*i.e.*, inadequate and weak) uterus may be treated by diathermy, endocrine compounds and vibromassage; and should be given complete repose during the recurrent days corresponding to menstrual dates. Thus, the full motherhood of healthy children may become possible. If there has been syphilitic infection, all the modern arsenal against lues should be employed. If there is thyroid defect—thyroid tablets are indicated.

In certain cases, where the etiology is still obscure, iron tonics and especially iodine therapy may be entirely successful. For such cases are generally the results of latent syphilis—often tertiary or inherited—and even where no precise traces can be found, they react with surprising success to iodide of potassium, in the earliest months of gestation—combined, of course, with extra "periodic" rest in bed.

CHAPTER VIII

STERILITY IN WOMEN

PART III

Treatment by Surgery

OPERATIVE treatment is indicated in certain categories of sterility, where other means have failed or are obviously inadequate. Such cases include :—

(*a*) Mechanical obstructions of the genital tract ;

(*b*) Certain constitutional morbid conditions ;

(*c*) Inflammatory degenerative conditions, and lesions of the feminine organs.

Conception may be prevented or hindered by extreme rigidity in the structure of the *os uteri* and the cervix. Often a simple dilatation suffices to cure years of childlessness. But it may be necessary to cut open the *ostium* in order to make it functional. Far too often this is done by incisions from either side ; *Chrobak's* operation of splitting the lower "lip" is far preferable. Again, the infantile cervix may be dilated with metal sounds or *bougies*, which smooth out the *rugosæ* of the mucous membrane, or the uterus may be curetted. Dilatation, as distinct from curettage, should be repeated a few times, at intervals of three months ; and, if necessary, combined with discission of the ostium. Or dilators may be introduced and left *in situ*, though under observation—for longer intervals of time. In order to dilate and open the cervix—whose contractions he also sometimes attributed to "severe nervous trouble"—*Nassauer* [110] invented a hollow sound, termed by him the "Fructulet." This instrument, "if introduced into the womb, prevents it from closing during intercourse, so that insemination occurs." *

* Quoted from *Nassauer's* work : "Des Weibes Leib und Leben," pp. 121–122. *J. L. Audebert* [111] has made similar experiments, which have had good results in a certain percentage of cases.

But, of course, this " Fructulet " is a " foreign body " and can easily lead to injuries and inflammations, and even morbid growths. Constant vigilant inspection is therefore indicated *at least every four weeks*, about the menstrual period. Vaginal douches of alum or lactic acid solutions must be used against the resultant discharge, the instrument must be removed and disinfected, and may only be replaced if there are no inflammatory symptoms.

The *length of time* during which the Fructulet was designed to be used has very serious drawbacks; and, accordingly, there are emphatic opponents to its use. Nor can I feel myself justified in recommending its prolonged retention in the cervix; it is too risky.

But I think the advantages of the invention may be retained by leaving it in position for a certain number of *hours* rather than *weeks*.* I would suggest twenty-four hours or forty-eight, according to circumstances, rather than for even one week.* I would suggest, rather, in appropriate cases, the insertion of the Fructulet, or a similar instrument at the optimum time for conception; coitus, on a few occasions, in such position and attitude as may bring the *ostium* and mouth of the inserted tube as near as possible to the male *glans;* repose of the woman for about half an hour after coitus, in the same position; and removal of the instrument next morning by the medical adviser. But, of course, this procedure demands the utmost personal cleanliness, as well as professional precautions, and should never be recommended to couples who fail in this respect.

Another remedial measure is *Fehling's* [113] irrigation, which should be repeated twice or thrice. The cervix is previously dilated sufficiently with metal sounds; a specially constructed glass tube is then introduced into the uterus, *with strict aseptic care*, and left for three days. On its removal the uterine cavity is irrigated with a 10 per cent. solution of formalin to prevent endometritis, and diminish the flow of secretions. *H. R. Schmidt* [114] had successful

* *Zangemeister* (112) recommends a hollow tube permitting drainage of the cervix, and its retention for a week. *Hamm* uses an instrument like *Nassauer's* Fructulet, but for a quarter of the time (also one week).

results in 33 per cent. of his cases with this method, including cases which had previously been totally sterile.

Chronic inflammation and excessive proliferation of the uterine membrane can be operatively met by curettage, with a spoon-shaped instrument. As a morbidly affected membrane is unsuitable for "implantation"—assuming fertilization to have occurred—a fresh wholesome epithelial layer may be formed when the degenerative tissue is removed.

Myomata and Polypi (Pedunculated tumours) of the cervix must be surgically excised.

After the first confinement we sometimes find several lacerations of the perineal and vaginal muscles. There may ensue infection from *bacillus coli*, and catarrhs, discharges and inflammations, causing one-child sterility. Also, a defective closing mechanism of the vagina allows the semen to ebb or drip away. We must, therefore, repair the perineal injuries to promote conception, as well as for other reasons.*

Over-strained or flaccid muscles of the pelvic floor may be treated by massage (per rectum), special exercises or electricity. *Walthard* is of opinion that the best form of muscular exercise is the rhythmic lifting and lowering of the pelvis, and simultaneous contraction and relaxation of the perineal and vaginal muscles. *Reifferschied* [115] suggests the addition of certain elements of resistance to be overcome. In "Ideal Marriage" (Chapters IV., V. and IX.) and in the present book (Chapter V.), we have already dealt at length with the reproductive and erotic rôle of the pelvic muscles.

Growths and tumours, such as fatty tumours and cysts of the *labia* and Bartholin's glands, must be surgically removed. The result often gives immediate satisfaction.

When the hymeneal membrane is abnormally thick—rigid—or with an extremely minute orifice which resists all efforts at penetration, it should be surgically perforated and, if possible, totally removed. Such assistance sometimes becomes necessary for other causes than those of anatomical

* See "Ideal Marriage," pp. 61–63.

structure. Nervous dread of hurting or being hurt, lack of dexterity, or incomplete erections on the part of the husband, may make it necessary to remove the hymen in married women by a slight surgical operation and thus make normal intercourse and probably impregnation possible.

In some cases of *vaginismus*, gradual dilation is inadvisable, and the same procedure—*i.e.*, surgical perforation or excision—is indicated, supported by psycho-therapeutic treatment; the operation should be performed while the patient is under narcosis. I have, occasionally, combined this operation with an incision into the posterior commissure, and a suture which formed a shallow *groove*, facilitating intromission. These cases gave remarkably satisfactory results. Of course, the raw surface and edges must be carefully kept under observation; and the introitus must be kept well open and treated with emollients until the wounds have quite healed.

Lacerations in the cervix (or lower extremity of the uterus) are often contributory causes of sterility. They are accompanied by inflammations of the interior cervical membrane, and also impair the peculiar *suction-mechanism* of the uterus. They should be carefully sutured.

Uterine displacements, which prove intractable to correction by pessaries, should be surgically treated.* The best operative methods are those based on the shortening or reefing of the ligaments or muscles supporting the womb. This procedure restores the normal position of a *retroflexed* uterus. When the retroflexion is mobile, and not rigid, it will generally suffice to lift the muscles, but when the retroflexion has become rigid, the abdomen must first be opened up, in order that the adhesions shall be removed.

If sterility is caused by myomata (uterine tumours) or by degenerative changes or growths in the ovaries, the abdomen must, as a rule, be opened up. And if there is reason to suspect appendicitis, it is right to make a thorough investigation, in order to clear away adhesions and malformation involving ovaries and tubes as well.

* See Appendix II. to Chapters VII. and VIII.

Another imperative indication for abdominal operations here is inflammation of the tubes. Or rather, the *results* of such inflammation, for so long as *active* salpingitis is present, it is best to refrain from operative interference (unless other causes than sterility make prompt action urgent).

In less acute cases it is sometimes advisable to attempt *tubal insufflation*, before having recourse to abdominal operation.*

The best dates for this crucial procedure of insufflation are from four to seven days after the menstrual period has ceased, as these days coincide with the most favourable state of the membranes of uterus and tubes.

But the attempt *must not be made* (*Graff*,[116] *Koboth*[117]) under any of the following conditions :—

(1) At the monthly period ;

(2) In cases of gonorrhea or purulent cervical catarrhs (purulent leucorrheas) ;

(3) In recent alterations of the peritoneum and genital tract ;

(4) When there are hæmorrhages ;

(5) In any case of suspected carcinoma uteri (cancer of the uterus) ;

(6) In any case of certain or suspected tuberculosis of the genital tract ; thus, in fact, if there is any possibility of transporting bacteria or pathogenic organisms from the uterus into the oviducts or the abdomen.

It is often possible to dissolve slight adhesions by means of insufflation, and thus to make conception possible ; for an adhesion of the oviducts, *though in itself not a gross lesion*, is an obstacle to the passage of the ovum.

This operation was first initiated and performed by *Rubin*. He has reported 101 cases of pregnancy after insufflation in hitherto sterile cases, and subsequent practice has confirmed these results.

Kennedy[118] has used a modification of Rubin's method, by insufflating not gas, but an opaque substance, *i.e.*, one which is impenetrable to Röntgen rays, such as Iodipin, Lipiodol or sodium bromide. Plates are then taken of the

* See Appendix III. to Chapters VII. and VIII.

uterus and both tubes, and the exact position of the adhesion and the insufflated substance is shown.*

If radiography reveals that the obstacle is at the wide fringed bell-mouth of the tube, the abdomen is opened up and the tube slit, and a new mouth constructed. This was done by *A. Martin* as long ago as 1885. If the adhesion is towards the narrower uterine extremity of the oviduct (or isthmus) it is possible, in many cases, to sever oviduct and uterus and, after removing the injured portion, to replant the oviduct in the former site. Of course, this delicate operation makes the highest demands on the surgeon's skill, but may be followed by the happiest results.†

The restoration of the *wider* end of the oviduct by surgical methods is termed stomatoplastic (see Fig. 3 on Plate IX). It may also be successful under certain circumstances. It is advisable to perform a *therapeutic insufflation* between four and six weeks after the actual operation in order to keep the newly formed oviduct open and free from adhesions, so that pregnancy be not again prevented. For we have quite a number of cases in which women in whom the channel of the oviduct had been restored by these means, conceived more than once and with ease. The great drawback of such operations is an *increased liability to ectopic pregnancy. Fuchs* has some interesting statistics compiled from available medical data which show that after "stomatoplastics," the ratio of extra-uterine to normal pregnancies is 2·5 cases per hundred. A relatively slight risk perhaps, compared to the chances of complete success in the purpose of the operation—but a percentage of risks *which makes careful supervision of women who have been so operated upon essential as soon as menstruation ceases.*

There may be circumstances in which the *removal of both tubes* becomes imperative, as when, in acute salpingitis and ovaritis, the organs have become saturated with pus or ulcerated. Even when tubal re-implantation is impossible (see above), it may be feasible to implant at least a portion

* Radiography–Salpingography. See Appendix IV. to Chapters VII. and VIII.

† See Appendix V. to Chapters VII. and VIII.

of one of the ovaries, with its connective tissue, in the uterine wall, and thus to conserve some degree of reproductive power.

Tuffier and *N. L. Estes* have both developed these possibilities in different ways. They are the most experienced exponents of ovarian implantation. At the beginning of 1925 *H. Hartmann* [119] was able to report on twenty-nine such operations by the French surgeon and one hundred by his American colleague. The chances for complete and normal pregnancy with children *are about* 10 per cent ; and it must not be forgotten that there are certain further risks. Any woman who becomes pregnant after such an operation should be carefully supervised, and should reside in or near a town where skilled surgical and gynecological help is easily accessible.

In *H. Sellheim's* [120] short thesis on the treatment of sterility, the operation, as performed and modified by him, is described and illustrated with diagrams and photographs.

Ovarian operations are also sometimes requisite in order to cure sterility.

An ovarian tumour or cyst may prevent pregnancy to full term, through its pressure on the *corpora lutea ;* and miscarriages may result. After the cyst has been excised, gestation becomes normal and generally successful.

Other cysts of the corpus luteum itself cause amenorrhea and sterility, and must be excised.

There is also a condition which generally attacks both ovaries simultaneously, and is known as *multiple ovarian cysts.* The ovaries have then to be divided or intersected, and then re-sutured after removal of the degenerated tissues ; even such mutilated organs, so long as sufficient healthy tissue remains, are able to provide follicles and ova, and hence to make pregnancy possible. But, so long as the cysts remain this is impossible, as no functional ova can be formed.

In many cases of previous genital inflammations, a long desired pregnancy may be achieved by opening the abdomen and removing the adhesions of uterus, oviducts and ovaries

or a chronically inflamed vermiform appendix. Often the adhesions are extremely minute, or there are deformations and rugosities, as thin as fine wire, around the isthmus of the oviduct, which, however, may bend and block the passage of the ovum. When these adhesions have been removed a pregnancy generally occurs with convincing promptitude.

Other causes of sterility are endocrine, or hormonic; especially is this the case when the ovarian secretion is inadequate. If the treatment with pluriglandular preparations—as suggested in the previous chapter—is unsuccessful, it may be necessary to have recourse to surgery.

The most direct and specific dynamic agent, for ovaries which have ceased to function, is the transplantation of active and healthy ovarian tissue. The transplanted tissue corrects and "speeds up" irregular or spasmodic follicular maturation, and modifies the tendency to premature ovulation of —obviously—imperfectly developed ova. This method of transplanting ovarian tissue also counteracts the tendency to the formation of multiple ovarian cysts.

The operation is technically simple, but many precautions are necessary in order to ensure that the transplanted tissue heals and merges entirely into its new matrix. It is best, if possible, to take the fresh slices of ovarial tissue *from a woman related by blood to the patient, into whose ovaries they are to be incorporated.* The abdomen is opened and the fresh tissue grafted. Transplantation of the whole ovary has been known and practised for some time, but not, as a rule, for sterility, but in order to prevent hæmorrhage or secure "rejuvenation." There is an account of this procedure by *Vittorio Pettinari,* [121] and a further interesting study by *Paul Sippel.* [122]

In some cases both ovaries have to be removed. In order that the woman may retain the power to conceive, a functional slice of tissue from the excised organs may be grafted on to the tube mouth, or into the uterine wall, in such a manner that one end of the "graft" projects into the uterine cavity. In such cases a woman who has been sterilized through bilateral salpingitis and ovaritis, may become fertile in spite of the removal of those organs.

There can be no objection, *in principle*, to such operations, provided that the patient and her husband fully agree and consent. They may be regarded indeed as masterpieces of modern surgery; and, when they are followed by pregnancy, the child the woman carries and bears is absolutely *her own*.

The position is different, and extremely difficult, when a woman has had both her own ovaries removed, but is "grafted" with ovarian tissue from another woman for the purpose of achieving pregnancy. The first such operation was undertaken in 1906 by the American, *Morris*, and resulted in pregnancy and delivery at term.* There are deep psychological factors to be considered when we decide whether such operations can be in the best interests of the mother or of the child who may be, or is born. Otherwise, too, they raise problems—extremely intricate difficulties. For instance, who is the *real* mother of a child conceived and born because of such an ovarian "graft"? *Biologically*, of course, the real mother is she from whose body the fresh graft of ovarian tissue was obtained; her precious vital tissue has supplied the fertilized ovum. But *juristically*, the woman who carried the embryo and brought forth the child is the undoubted mother, although, organically, she is a sort of "incubator." And what of the result on her own psychic health and happiness, and her feeling towards the child, if she realizes her organic position? The results, for all concerned, including the husband and father, may be disastrous; and the adoption of some orphan would be far preferable to such an abnormal and bizarre operation.

I would also remind readers of the intimate interchanges of metabolism throughout pregnancy between the woman and the child *in utero*. The heredity of the transplanted ovum might be most undesirable; and some influence on the constitution of its foster-mother—or shall we say *uterine* mother?—is extremely probable.

Finally, we may mention *artificial insemination*, which may be a last resort in some cases, and with which we shall deal fully in Chapter XI.

* See Appendix VI. to Chapters VI. and VII.

We may summarize as follows: In spite of all the difficulties of treating feminine sterility—difficulties both theoretical and technical—the medical man has a full arsenal of methods which may be used, either singly or in various combinations, with success.

But such success often implies much patience and ingenuity on the part of the doctor, patient and, not least, the latter's husband! Careful and detailed consideration should be given to all possibilities, before treatment is decided on. And the doctor in charge of the case should *deserve and receive* complete confidence; he must be fully informed on the psychical and practical aspects of the sexual life and general relationships of both partners to one another, in order to diagnose and prescribe aright. It is impossible, in *any* case, to *promise* the desired result. In this field we encounter the most amazing results, both positive and negative. Apparently simple, intelligible and uncomplicated cases defy all our skill: on the other hand, pregnancy and motherhood may result when we have given up all hope.

Age is an important but individually diverse factor. In cases of *protracted primary sterility*, we can hardly expect results in women above forty years of age. Nevertheless, there are exceptions here, just as, in cases where there have already been children, pregnancies are quite frequent in the forties. Nature is full of surprises in this respect. There have been cases of the birth of live and healthy children to mothers of sixty-two and even sixty-eight years of age. Details are given by *Priou* and *Depasse*, [123] and *Herschan* [124] has observed and recorded the birth of a strong, healthy child at full term to a woman of fifty-five, who had apparently reached the climacteric!

These are exceptional cases. Nevertheless, they prove that, even in middle-aged women, sterility may be overcome, especially if they marry late, for the second time, after a long interval of repose. This interval of repose and recuperation for the genital organs may bring healing to chronic inflammations resulting from their first marriage, and thus normal function may be unexpectedly restored.

A final point of crucial significance is the need for *prompti-*

tude in treatment, if it is desired to overcome a condition of sterility. The earlier such treatment is initiated, the more likely and more rapid will be its success.

And for this reason alone, if for no others, men and women whose happiness is at stake should take the trouble to learn enough of the factors involved to be able to avoid certain dangers, and, if this has been impossible, to summon help before it is too late

APPENDICES TO CHAPTERS VII AND VIII

I. Mild Dosage with Röntgen Rays.

Flatau [125] and *Thaler* [126] have healed cases of sterility (due to disturbed or inadequate ovarian function) in many persons by the application of mild dosages of Röntgen rays.

Linzenmaier [127] and *G. A. Wagner* [128] also recommend this procedure in marriages which remain sterile for several years. *Geller* [129] is of opinion that this röntgenization *activates and regulates* the cyclic process in the ovaries, and also possibly increases the flow of blood to the uterus and expands it, as he was able to observe this effect on an animal, following only one röntgenization of the uterus.

Borak [130] prefers to röntgenize the hypophysis instead of the ovaries, and reports the same measure of success. This may appear strange to the laity, but the röntgenization of the anterior pituitary lobe causes a more abundant secretion of its specific hormone, and this extra endocrine supply causes the ovaries to become more active and expands the uterine tissues.

II. Pessary Treatment of Retroflexion.

In my opinion, there are no absolute objections against the application of pessaries in cases of uterine retroflexion; but the pessary should not be left *in situ* for long—never more than three or four months at a time, and generally for a few weeks rather than months. I admit that the pessary often keeps the womb well in place. But in the long run the pessary *causes a discharge* which is not only offensive, but also certainly far from favourable to conception.

And the presence of this foreign body in the vagina, as well as the necessary cleansing douches which it involves, disturb the natural chemistry of the vaginal secretions to such a degree that I doubt whether the sperms can thrive in it. This disadvantage

might, of course, be met by the injection of a solution of some medium favourable to the sperms, just before coitus (see the remarks on this subject in the text of Chapter VII).

Even so, the pessary itself is a hindrance to communion. Many married couples find it quite intolerable, whether as a mechanical obstacle—as is quite possible—or psychically, in spontaneous taste and emotion which is, perhaps, more frequently the case. And the complete and ideal functional act, which is so important, especially for conception, is certainly impaired.

III. Insufflation of the Oviducts.

The inventions of the processes of insufflation and röntgen photography of the tubes represent an important advance in the technique of overcoming sterility. *Le Lorrier* discovered them in 1912 and *Rubin* [131] may also be considered their initiator. *Kennedy* [132] developed them, and *L. Fränkel* and *Schober* [133] introduced them into European practice. By means of insufflation and salpingograms, it has become possible to ascertain and exactly locate such causes of feminine sterility as occlusions of the tubes and adhesions of tubes to ovaries—without having recourse to such major operations as abdominal section.

Many such operations have been rendered superfluous, if it has been possible to remove the obstacle by insufflation, or definitely to prove by radiogram that no surgical measures could be of any avail.

As early as 1914 *Rubin* [134] tested the state of the oviducts, both in animals and in *post-mortem* experiments on women, by injecting a silver solution (Collargol) into the womb and immediately radiographing the organs. In 1919, in living women he substituted gas for Collargol; first of all he used oxygen, then carbonic acid gas; and, of course, the Röntgen photograph had to be omitted. A specially constructed apparatus is used in these experiments (termed by *Sellheim* a "tubal insufflator") and the special substance, oxygen or carbonic acid, is driven through the tubal duct from the uterine extremity. A mercury "manometer" is combined with the Insufflator, and shows and regulates the necessary degree of pressure.* Experiments have shown that if the tubes are clear the insufflated gas penetrates into the abdominal cavity under the following conditions:

At a pressure of 60 to 80 mm. in women who have borne several children (multiparæ);

At a pressure of 100 to 120 in women who have borne one or two children, and

At a pressure of 120 to 150 in childless women (nulliparæ).

* In England the apparatus often used is known as Provis's Insufflator. For details of this, and the technique of lipiodol salpingograms, see *Fordsike's* "Sterility in Women," London, H. K. Lewis, 1928.

If the pressure is raised to 200 or 250 mm. without any current of gas reaching the abdomen, it may be concluded that there is *complete bilateral occlusion of the tubes*. When there is *unilateral* occlusion a pressure of 100 mm. generally suffices, and *is accompanied by acute pain in the region of the closed oviduct*—if the *isthmus* (*i.e.*, uterine extremity of the oviduct) does not happen to be blocked. As will be seen, both in the text and the following appendix, specialists have since returned to the method of radiography following the injection of radio-opaque substances, so that both modifications of technique are used in combination.

IV. Salpingography (or Salpingograms).

Salpingography has many adherents, but some voices have been raised to urge caution in its application.

R. S. Hoffmann [135] cites various cases recorded in medical literature, in which salpingography has caused undeniable injuries. One case which he had to take over for remedial treatment is so important that it deserves mention in detail. A married woman, who had been thoroughly healthy until the operation in question, but who had failed to conceive in three years of married life, had had a Lipiodol injection by a foreign specialist; the results after a few days are described as follows, by *Hoffmann*: "The first radiographs showed that the Lipiodol had only reached the sphincter of the oviduct; the pressure was raised to 100, and both tubes filled up to the brims, *i.e.*, their abdominal extremities; then on an additional radiograph, the substance was visible as it emerged into the peritoneal cavity. The result was therefore favourable, inasmuch as both tubes were evidently open. But, after four days, there were pains on the right side, which rapidly intensified. Menstruation followed, with a rise of temperature to 39·8 degrees Centigrade, nausea and vomiting, obstipation, meteorism, and soreness of the whole abdominal lining. I diagnosed acute metritis, salpingitis, ovaritis on both sides, and dangerous irritation of the peritoneum. The patient was confined to her bed for a month, and, after further months of treatment at Franzensbad, is in a better condition, but still suffers occasional pains, especially during coitus. There are still considerable swellings in the uterine adnexa, especially on the right side; although conditions were perfectly normal at the preliminary examination undertaken before the first salpingogram.

"In this case, *Insufflation* would have been amply effective as a proof that both tubes were clear, and would probably not have been followed by the severe infection which did, in fact, supervene. The patient's chance of conception has certainly been much diminished.

"A case of this kind is a warning to vigilance and special caution in using radio-opaque injections, in genitally normal

cases. Insufflation, which is comparatively safe, should certainly be preferred. Only if insufflation gives a negative result, and a surgical operation is decided on, is it permissible to take a salpingogram in order to ascertain the exact area of the occlusion."

I can only associate myself with *Hoffmann's* conclusions.

V. Pregnancies following Re-grafts of Excised Tubes.

By the middle of the year 1927 seven cases of impregnation after such re-grafts of excised oviducts were already on record. They were described by *Unterberger*,[136] *Cullen*,[137] *Pfeilsticker*,[138] *Michaelis*[139] and *Mandelstamm*[140], and various further cases have been added since that date.

This operation is explained in Fig. 2 and Fig. 3 of Plate IX., and may be compared with Fig. 1, which shows the normal female organs, as they would appear in the abdominal cavity when seen from above.

VI. A Successful Heteroplastic Ovarian Graft.

Morris[141] gives an account of a successful heteroplastic implantation in the case of a married woman, twenty-one years of age, who had not menstruated for over two years, and showed symptoms of premature senescence. He entirely removed the ovaries, which were cirrhosed. By using *Tuffier's* angiotribe, he made sure that no degenerate ovarial tissue was left. Immediately after this excision, *Morris* removed a triangular portion of ovarian tissue from a woman of thirty-three years of age, confined of her third child, who had just been operated on by *Boldt* for uterine prolapse. This ovarian tissue was placed in a physiological saline (muriatic) solution at a temperature of 37·8° Centigrade. Slits were then made in the *ligamenta lata* of the castrated patient, on either side, parallel to the tubes, a piece of the fresh normal ovarian tissue was inserted and sutured in each slit. After four months' interval, the patient menstruated for five days; there was another interval of five months, followed by one day of menstruation; and, after another month, the periods occurred normally, and the patient felt in good health. Four years after the operation, she gave birth to a daughter whose weight at birth was 3,400 grammes. *Morris* was surprised at the success of this operation, as, *in his tests on rabbits, heteroplastic grafts had failed in comparison with homoplastic.* If he mutually immunized the animals, the heteroplastic graft was shrivelled and dispersed with particular rapidity. But, in the human case, the two sets of tissues were *tolerant* of one another. It will be interesting to learn whom the child resembles. *Morris's* first publication on ovarian heteroplastic grafts appeared in 1895.

CHAPTER IX

IMPOTENCE IN MEN

PART I

Significance, Mechanism and Psychic Factors

MEN may be incapable of begetting offspring in two perfectly distinct ways. They may be able to secrete normal active and motile sperms, yet unable to deposit these sperms in the woman's organ : that is to say, unable to perform the sexual act in a physiological manner. This is technically termed Impotentia Cœundi, and we might term it *coital impotence.* Or, men may be able to have an erection and perform coitus, yet not to ejaculate normal active and motile sperms. This is termed *Impotentia Generandi*, or procreative impotence, and implies *genuine* sterility. In the first type of Impotence, the sterility is relative. In consonance with the respective structures and functions of the genital organs, in men and women respectively, we find that male impotentia cœundi, or coital impotence, is much commoner than analogous disturbances and defects in women. In fact, most cases of masculine sterility are really relative, *i.e.*, due to coital impotence.

But, both in the relatively or coitally impotent and in the genuinely or procreatively impotent man, sexual *libido*, or the urge to specific sexual activity, as a rule, persists. Even a totally impotent man generally desires to have connection, but this is impossible for him, on account of various conditions, which we shall discuss in detail. There are further abnormal conditions of the complex cerebro-genital mechanism, in certain sexual perversions, in which the subject has little or no desire for normal coitus, but becomes ardent and fully potent if and when the particular stimulus he desires is available.

Masculine potency is a complex faculty, which may be analysed into the following four elements:

(1) Libido, or urge for sexual activity.
(2) Erection, or swelling and rising of the member.
(3) Ejaculation, or emission of semen.
(4) Orgasm, or culmination of sexual pleasure.

In genuine procreative impotence, all these elements are generally active, *but functional spermatozoä are not emitted.*

But coital impotence implies some dislocation or suppression of one of the aforesaid contributory factors, or of more than one. Thus, *libido,* or sexual desire, may be present and urgent, but erectile capacity may be subnormal, so that intromission or insertion becomes impossible. Or, on the other hand, the libido may be so slight that the nervous *impetus* does not suffice for erection. Or ejaculation may be premature, so that it occurs before intromission, and the sperms are spilled " ante portas " or on the threshold of the vagina. The most frequent causes of impotence are, however, total loss or subnormality of erectile capacity.

Before discussing these symptoms in detail, we must recapitulate the physiology of potency, in order to elucidate our discussion.

We will consider the four elements in potency: Libido, Erection, Ejaculation and Orgasm. Libido, or desire for sexual activity, is primarily caused by the *hormones* of the gonads, or genital glands, which are poured into the blood stream and cause a specific excitement of body and brain-cells; a *tumescence,* or *tension* which aims at *discharge* and *relaxation.* We must conclude that the amount of the hormones poured into the blood stream—as well as the individual psyche (mental and emotional entity)—varies greatly, both from time to time, and from one individual to another. Further, we must take into account a special sexual and erotic susceptibility, both in degree and in quality (*Van de Velde* [142]), which is based on endocrine constitution, and gives the individual impress and flavour to this side of life.

Erection, or change of size and position of the male organ, is caused by the congestion and distension of the veins of the *corpora cavernosa.** For this process to occur, the special nerves, or *nervi erigentes*, must be stimulated, and communicate their stimulation to the network of veins and blood vessels which fill the organ. This precise degree of congestion, and its duration, normally determine whether the erection is adequate for its functional purpose or not.

Both ejaculation and orgasm occur as the result of accumulated physical sensations and emotions.

The actual process of ejaculation has two successive stages which have been enumerated and analysed in " Ideal Marriage." The first stage, (*a*), is that of muscular contraction ; the smooth (or involuntary) muscles of the seminal ducts, vesiculæ, and prostate gland, move convulsively and project both spermatic and accessory liquids into the anterior urethra ; and here follows (*b*), the stage of emission of the liquids, thus intermingled into the characteristic *semen*, out of the anterior urethra, through powerful contractile movements of the whole musculature of the pelvic floor, controlled by the functioning of the *ischio-* and *bulbo- cavernosi*, and the perinei transversus muscles.

Orgasm begins in the first ejaculatory phase, as the seminal jet is propelled into the anterior urethra. Its cerebral aspect is the intensification of the impressions sent by the nerve channels to the brain, so that consciousness is, for a few moments, completely absorbed by *Voluptas*.

We must assume that not only the force of the urge to sexual activity but the normal process of ejaculation and orgasm as well are dependent on a *saturation of the whole body, and especially of the central nervous system*, with the hormones or endocrines of the gonads. This saturation is helped by the interaction of other endocrine glands, hypophysis, or pituitary, thyroid, adrenals and prostate : all these exercise contributory influence, although less significant than that of the testicles. As yet, we know little of the respective quantitative and qualitative rôle of the

* See, for full details, " Ideal Marriage," Chapter VII., pp. 115–141.

several endocrine glands. We believe that in the male organism, the testicles "play lead" * and that their hormones supply the elements of tumescence to the whole body, from cerebral cortex to genitalia. But, both the condition and the function of the testicles are probably largely dependent on the hypophysis or pituitary gland.

The hypophysis secretes from its frontal or anterior lobe a *supreme sexual hormone, common to both sexes,* which influences the whole genital apparatus (*i.e.*, in men, the testicles and penis, but also, and especially, the important accessory structures of the *vesiculæ* and the prostate gland).

Potency is not only glandular, but nervous as well. The exact *nervous mechanism* of this function is quite as intricate and uncertain as the inter-relationships of the endocrines. *Erections* can be caused in three ways: (*a*) through wholly psychic channels, by means of imaginative concepts, impressions and images formed by the brain, (*b*) through reflex action, by means of external contacts with the genital organs, and (*c*) automatically, through accumulation of secretions in the *vesiculæ*.

But, in all these different processes there must be sufficient nervous stimulation to cause congestion of the *corpora cavernosa*.

It may be more easily intelligible to classify impotence into the following categories:—

(1) Neuro-psychic impotence.
(2) Impotence due to abnormalities of the sexual impulse.
(3) Impotence caused by general morbid conditions, weakness or disease.
(4) Organic impotence.

There is enormous diversity of manifestations here, both in degree and duration. Impotence is absolute when the man in question cannot perform coitus in any circumstances. But impotence may also be relative: that is, the man may fail in the sexual act under certain special condi-

* See Appendix I. to this and the following chapters (IX. and X.).

tions, internal or external, but may be conspicuously potent when these inhibitive conditions do not exist. Impotence may be temporary; this is frequent and, indeed, physiologically normal, as *no man is always and at every moment* capable of performing the sexual act. *Under normal conditions* the organs of the woman are capable at any time of experiencing coitus—even if only passively: they will admit the male organ, even if they do not respond. But the man can only begin to have intercourse when he is *in erection.* And, in order to have an erection, certain preliminaries are necessary; there must be some mental and imaginative activity, *certain trends of thought,* which cannot always be summoned at will, and which, *even when in operation, can be so dislocated or terminated by comparatively trivial things* (*mental or material*), that intercourse becomes impossible, at the last moment.

Neuropsychic impotence has two main forms. It may manifest, either as premature emission—ejaculatio præcox—or in disturbance and subsidence of erectile capacity. When both these distressing symptoms are present, in their extreme form, they can make a man wholly incapable of procreating. Laymen generally understand impotence as disturbance or subsidence of an erection which has already begun.

Premature ejaculation and inadequate erection are both comparatively frequent. We will only refer to them here in regard to sterility, and will therefore ignore the cases in which ejaculation takes place within the vagina, because this does not prevent fertilization. Nevertheless here, too, there is inadequate potency, as the emission generally *occurs before full erection or deep penetration,* and thus deprives the woman of the full sensation and relief due to her.

In *ejaculatio præcox,* desire, erection and orgastic sensation in the man are generally normal; but premature, for either before, or in the moment of contact with the *exterior* female organs, emission occurs (*i.e.,* emission "ante portas").

When this form of *ejaculatio præcox* continually recurs, it is a *neurotic manifestation.* Its causes are not local or peripheral, but cerebral, central or psychic.

There is, however, no need to diagnose or fear sexual neuroses in cases of occasional *ejaculatio præcox,* or *ante portas.* This distressing and depressing accident may occur to the most healthy and potent of men, especially if certain hindrances in the psychic or material situation contribute towards it, even at the summit of excitement. And when the—indispensable—prelude and preliminary excitement have been too prolonged, *ejaculatio præcox* is almost physiological. It often occurs in first intercourse, or on the nuptial night, if the man has rapidly reached a high degree of tension, while the bride he so fervently desires is reluctant or even offers some resistance : it may also happen owing to lack of technique and unsuitable postures and attitudes which make penetration difficult and painful.* But, as a rule, after the difficult crisis of defloration, a sexually normal man ceases to suffer from premature emission, when intercourse becomes mutually satisfactory.

Many perfectly healthy men tend towards a greater or lesser degree of *early ejaculation,* as a personal idiosyncrasy. Their sexual reactions, though delicate, are very rapid. Savants, artists and brainworkers, are very often sexually *accelerated,* but are much appreciated as partners by certain types of intellectual women.

But typical and genuine or habitual *ejaculatio præcox* is a severe form of neurosis—*if it is not due to severe inflammations of the posterior urethra, around the urethral crest.* The precise psychic mechanism here is differentiated in different individuals. *Marcuse* considers ejaculatio præcox a *neurotic wish fulfilment*—a compromise between the desire for intercourse and the fear of consequences or of the act itself. And this fear can manifest itself in aversion and rebellion against the special circumstances of a sexual situation, or in antipathy towards the partner in the act.

The psychic *roots* of the disorder may include anxiety, or nervous dread of a possible " accident," haste, secret

* See " Ideal Marriage," Chapters XI., pp. 216–218, and XIII.

doubts of the subject's own virility, definite fear of being spied upon or surprised, secret protest against the partner in the act, motivated by sense of sin, fear of disease, resentment through some other cause, or fixation on a third person.

Stekel has probably the greatest experience of treating psychogenic impotence. He believes that *ejaculatio præcox* is brought about, (1) if desire is too weak, as, for instance, with a partner who does not attract strongly; (2) if there are considerable inhibitions, such as the fear of infection, disgust, religious scruples, ethical scruples; (3) if this prematurity appears as a protest of Freudian "Censor" against acts which are felt to be wrong or perilous. *Stekel* quotes a case in point. A married man made repeated attempts to have intercourse with one of his domestic servants who was *virgo intacta.* Though he was exceptionally vigorous and potent sexually, he experienced, for the first time, the humiliating fiasco of an ejaculation "*ante-portas.*" A second attempt gave no more agreeable result; and further efforts were equally vain. His subconscious aversion and condemnation of the deed he consciously intended and desired, succeeded in influencing his bodily functions, so that on every occasion "nothing could happen."

There is no doubt that similar subconscious "defence mechanisms" may be at work, in special circumstances, and reduce or cancel the potency of a very virile man; an absolute *neurosis* is only developed—to quote the formulation by *Marcuse*—when these resistances are either baseless or irrationally exaggerated in the light of objective facts, and *yet are refractory to conscious cure.* The *occasions* of these resistances are generally sexual fiascos, which would not be taken tragically by men of normal virility, but which become fixed in the minds of neurotics, so that the psychic shock exercises a continual inhibition on a sexual temperament which has been already depressed and emasculated by inferiority complexes.

Other psychic injuries and combats may have the same effect. Excessive self-relief, unpleasant experiences in

conjugal fidelity. The core of the truth in this remark is the incontestable fact that frequent repetition and habitual use diminish the intensity of any stimulation, and that this blunting of sensation, in nerves and brain, inhibits the local mechanism of erection.

But, as I have argued in detail in "Ideal Marriage," it is not necessary to have recourse to infidelity and adultery in order to escape the satiety of habit. The variety, which is so precious an ingredient of human life, may be found and created *within the marriage bond*, by those who understand how to make use of its potentialities.*

Other possible causes of failure in erectile capacity, amounting to temporary impotence, are incessant quarrels between the partners, anxieties and worries, aversion or indifference to intercourse on the wife's part, her lack of proper personal hygiene or loss of physical attractions. Another factor is jealousy, but this powerful primitive emotion may also excite desire and increase potency. In fact, all the psychological causes of "Sex Hostility in Marriage," which have been enumerated in the work under that title, may be the bases of disturbed or destroyed potency in the husband. And scorn and mockery from the wife greatly aggravate such symptoms, both in their degree and duration. Thus it becomes possible that there arises the occasional situation of a husband who is wholly impotent with his legal wife in their home, but of perfectly normal or even remarkable virility as the lover of another woman.

An element in the psychological causation of impotence, which is not always given due weight, is the caprice or *selectiveness* of sexual desire. This quality is less inherently pronounced in men than in women—the indiscriminate appetite of many men, as shown in prostitution, is biologically and sociologically significant; nevertheless, there are plenty

* See the Georgian song, by *A. Thalasso*, quoted in "Ideal Marriage," p. 243: "None ever knew as thou knowest, how to kiss and how to give ever new ecstasies to the embrace of love." See also Chapter I., pp. 7–9, of that book.—(Tr.'s Note.)

of more sensitive and highly differentiated masculine types, whose potency rapidly falls or gradually declines, if their sexual partner does not approximate to "their special type," or if she changes in some important respect.

In the marriage relationships of complex personalities, satiety and disharmony are specially likely to occur. The erotic affinity which makes erection and intercourse possible is best guaranteed if *both* partners are fundamentally *in tune* with one another, if they admire and approve of one another in other ways than, and as well as, the physical. This mutual *congeniality* is far too seldom appreciated or understood when the choice of a marriage partner is made.

A characteristic reaction to a *special situation*, corresponding to premature ejaculation in young husbands, is failure of erection on the wedding night: the so-called *bridegroom's impotence*. When the man is at last permitted to possess and enjoy what he has so long desired, his powers suddenly desert him, at the crucial moment—especially after prolonged secondary stimulation and all the half-contacts and half-surrenders of betrothal. Impotence on the wedding night is fairly frequent, and is, in itself, not at all serious, however unwelcome. But it may have dangerous subsequent reactions on potency—and therefore on marital happiness—in men who have neurotic tendencies, or are liable to a sense of inferiority, and whose self-confidence and spontaneity may be undermined by *one* such failure. For, in the circumstances of the bridal chamber, the man's surprise, shame and anger at the ridiculous position into which he is suddenly plunged by failure in erection, and the humiliation before the woman whose admiration means so much to him, may be aggravated by the resentment and contempt of the bride, who believes herself to be treated with unmanly and unchivalrous neglect, and who, if inexperienced, has no real comprehension of the situation. Thus, a temporary weakness may be indefinitely prolonged, or even permanently fixed. Mediæval literature and farces, and modern fiction (as well as case books), have often treated

this theme, which is not less tragic because it is also undeniably grotesque.*

The almost automatic resistance of a terrified maiden, who has not been sufficiently stimulated and reassured by the *prelude*,† and whose hymenal area is very small or very sensitive, may also cause failure in erection—if not *ejaculatio præcox*—in a sympathetic and shy man, whose own nerves will be in a state of acute tension.

But such temporary disturbances of potency are far less serious than the *genuine neuroses*, which may entirely ruin married life, and disgust and torment the wife of any man so afflicted. The majority of neurotically impotent men are the victims of constant anxiety, or of positive obsessions. And they have also an intense fantasy, strongly coloured by some emotion, of course, of their own inability to perform the act. The basis of this compulsive mental image, and emotional resistance, is generally to be found in some early and unsuccessful or humiliating attempt at intercourse, which was so surrounded by fear, shame and conflicts, that it was foredoomed before it was attempted. But this early (or even *initial*) fiasco acts as an auto-suggestion, and becomes a fixation; a profound instinctive *anticipation of incapacity to perform the sexual act. Bleuler* has an appropriate term for this form of inhibition: he calls it *anticipatory neurosis* or *neurosis of anticipation.*

Other instances of neuro-psychic impotence arise from *general inferiority complexes*, anchored deeply in the individual, and ramified so widely throughout his activities, that they must disintegrate the sexual impulse and negative virility. Such male neurotics as are obsessed by a dominant idea of this description become totally unfit for any normal relationship of love or marriage. With amazing ingenuity they themselves build up a wall between themselves and the woman to whom they are attracted; they spin a web of intrigue, in order to be separated from their beloved, in order to evade definite and crucial erotic situations. But, if a neurotic of this type has gone through the marriage

* See Appendix IV. to Chapters IX. and X.
† See "Ideal Marriage," Chapter XIII., pp. 255–263.

ceremony, he cannot very easily evade the necessity for coitus. Then the whole mechanism of neurotic inhibition works in obedience to his compulsive "idée fixe," his obsession of inferiority or "guilt." The "Id," as *Freud* has termed the subconscious mind, *Will not*, and the fully conscious *Ego, Cannot*, perform the act; and an adequate erection does not occur. Definite fear, or vague dread, sense of "sin" or of inferiority, or, possibly, repressed antipathy to his mate: whatever be the cause of the inhibition, the neurotic subject fails only because he has not a *sufficiently deep and rich emotion* towards his partner, or a sufficiently powerful urge toward sexual activity *per se* to overcome and submerge the "Dark Forces" of the soul.

And, of course, there cannot be such a deep and rich love-content where there is already an emotional fixation on another woman. That other woman may be the neurotic's Mother (Œdipus Complex) or Sister (Incest phantasy). There are yet further cases, where men cannot free their minds or bodies from their habitual response to, and, indeed, partial dependence on a former "*liaison*" with, a woman who realized their specific weakness and met them more than half way. They fail completely in coitus with the intact virgin who makes no allowances, has no resources of technique, and has, moreover, the anatomical obstacle of a hymen.

Secret desires for other women (such as a sister-in-law or the wife of a friend) may lead to impaired erectile capacity, as they occasion terrible psychic conflicts and sense of guilt in neurotic men, who mete out their own punishment for this virtual infidelity and "spiritual incontinence."

There are also men who can only execute coitus under special conditions, and in response to particular sorts of stimulation; without these necessary aphrodisiacs they cannot get an erection. In such cases, certain childish experiences and fixations set the tone for the subsequent sexual and emotional life. Thus *Stekel* mentions the case of a married man who was quite impotent unless his wife vigorously manipulated his organ.

Childish experiences—and in very early childhood—which include threats "to cut it off," addressed by ignorant mothers or nurses to little boys who are found masturbating or are addicted to *enuresis* produce the castration-complex. Psycho-analysts find this complex to be frequent among their neurotic patients, and consider it one of the main sources of psycho-neurotic impotence. And there are still many ignorant or deliberately dishonest quack, or *pseudo-moral* pamphlets and treatises, which tend to persuade occasional or habitual masturbators that impotence must result from their habit. And as pronounced neurotic cases are generally addicted to solitary gratification and self-relief, they are easily convinced that their "youthful errors" have rendered them unfit for normal married life. Consciousness of "sin" and fear of consequences blend in inhibiting full erection; and life may be ruined indeed, if his medical adviser cannot succeed in restoring the mental balance of a man in these circumstances, and dissipate his morbid fears and phobias.

The psychic causation of impotence has yet other forms. Certain hypersensitive men, who have learnt to associate their genital organs with impressions of disgust, feel that love is profaned by its natural physical expression, and become impotent with women whom they respect and love. There is quite often a homo-erotic element in these cases, though it may, and frequently does, remain below the threshold of consciousness. Many such men are impotent in marriage from the first, and thus wholly incapable of continuing their lineage to future generations. But a larger number experience a gradual ebb of erectile capacity, which finally disappears and cannot be recovered by the aid of any stimuli. Most of these "neurotic" or nervous, or nervously weak, "sexual cripples" are members of the educated and governing classes, amongst whom there are many cases of nervous degeneration. Another important contributory factor is the practice of *coitus interruptus*. The nervous system becomes so adapted to this practice, so inured to its *essential dislocation*, that when, at last, normal and

complete intercourse is intended, the unconscious dread of failure disturbs reflex action and leads to impotence.

We must briefly touch on the forms of impotence in normal relationships, which are fundamentally due to *abnormalities of the sexual impulse.* The gamut of possible aberrations is almost infinite, and some of the milder idiosyncrasies are separated from " normality " by very few degrees. We have already pointed out that full potency in some men is dependent on certain situations and certain special stimuli. In some marriages, there follows a mutual adjustment, and a *habitual preferential procedure* in sexual matters which is satisfactory to both partners; but this may become individually *essential to the act.* Thus, in a coitus without this preferential procedure—coitus, for instance, with a stranger —the man's virile power may desert him. And the same—*mutatis mutandis*—is equally true of women; individual preferences and idiosyncrasies of the sexual functions and emotions are, indeed, more frequent and more pronounced in women than in men, and the woman's orgasm is apt to be specially dependent on such accessories. Starting from these perfectly physiological variations, we find a whole register of reactions; *e.g.*, a man may only be potent when his wife or partner is dressed in some particular costume.* Or the anomaly may be deeper, and may amount to a negative perversion or *fetichism,* in which the man cannot perform normal coitus, but can only attain an erection through some abnormal contact with another part of his wife's body or with an inanimate object. Slight degrees of fetichism may be perfectly compatible with happiness and fertility in marriage, when the partners understand and love one another. But it is evident that graver deflections from the normal in the man may become a constant source of anguish and humiliation to a normal wife, and certainly make him totally unsuited for fatherhood, physically and ethically.

What has here been indicated as regards fetichism is equally true of the masochistic and sadistic perversions.

* *E.g.*, in furs, silk stockings, high-heeled shoes, or in some special colour, such as pink or red.—(Tr.'s Note.)

Here, too, the abnormal is an exaggeration, *a disproportionate unbalance* of tendencies which exist in normal persons. Delicate underclothing and dress accessories are graceful and attractive to all average tastes, but there is a serious departure from the normal if erections are *dependent* on the sight of, *e.g.*, high-heeled shoes or long gloves, or on contact with these articles. Similarly, the inclination either to suffer or inflict slight degrees of pain, before or during intercourse, is normally felt, and intensifies pleasure, without causing injury or degradation. But the border line here is enormously important, though subtle and variable; *as soon as these tendencies exceed certain limits, and especially when orgasm depends on the sensation or infliction of certain degrees of pain, and cannot be achieved in normal coitus, we have to deal with genuine sexual perversions, which exclude cohabitation with a normal partner, and generally prevent parenthood as well.**

A pronounced degree of male homosexuality is an absolute hindrance to fertilization, for an exclusively or almost exclusively homosexual man has such innate horror of intimate bodily contact with women that he cannot kiss a woman, not to mention copulate with her. And, if a homosexual man is misled into attempting normal coitus—either out of ignorance of his own nature or mistaken hopes of "cure"—his instinctive loathing either prevents erection, or if erection and insertion are achieved, then there is no ejaculation; and the whole proceeding becomes a grotesque and painful fiasco for both partners. I even know of cases in which male homosexuals, who were induced to go through the marriage ceremony, not only refused all intercourse, but would not permit attempts to "inseminate artificially" their wives with their own spermatozoä, though the wives desired motherhood: and they admittedly refused out of positive hatred.

Of course, the only means of achieving parenthood in such cases are through artificial insemination.

* See "Ideal Marriage," pp. 157–162, and the quotation from *Havelock Ellis'* "Love and Pain" in Vol. III. of "Studies in the Psychology of Sex."

Eugenically, of course, there are grave and obvious reasons why any medical man should refuse to perform artificial insemination in these conditions. But it is quite a different matter for the marriage partners to make some such attempt themselves by mutual agreement. They may make use of such more or less primitive methods as saturation of cotton wool, of tampons or of sprays in the seminal ejaculate and their insertion into the vagina. In a woman, otherwise apt for conception, these methods can undoubtedly cause the desired result. I am also certainly of opinion that the probabilities of success here may be greatly augmented by the choice of appropriate days in the monthly cycles and by the use of other methods favourable to conception (see Chapter V.).*

Profound and pronounced aberrations are almost incurable by radical therapeutic methods.† I leave out of consideration the attempts to remould sexuality by means of surgical operations and glandular grafts.

But in milder pathological cases, in which adequate normal emotional components are intertwined with perverse inclinations, psycho-therapeutic treatment may be applied, in carefully individualized form, and with likelihood of success—at least of success in so far as regards *procreative potency*.

In conclusion, I would refer to a class of cases emerging rather often to-day. In these cases, young men in whom the bisexual stage of emotional development, normal at a certain age, has survived longer than usual—have been convinced by companions of their own age, or by older and more definitely homosexual men, by means of persuasion or of mutual masturbation, that they are themselves genuine inverts. If the fundamental urge towards the opposite sex is, nevertheless, aroused, it is obeyed; but sooner or later,

* I will not further discuss the problem of homosexuality here, but must observe that *Stekel* believes this condition to be *acquired* through infantile and juvenile impressions and, therefore, at least in most cases, amenable to treatment. *Magnus Hirschfeld*, on the other hand, considers homosexuality *congenital* and, therefore, on the whole, unalterable.

† And Chapter VII., above.

and especially at the crucial moment of expected intercourse, autosuggestion may triumph and they may become impotent. If they are not clearly and fully informed of the psychic mechanisms at work, they head straight for neuroses. But adequate explanation—or, if there are more serious complications, psycho-therapeutic treatment—can save them from impotence and their married life from sterility.

CHAPTER X

IMPOTENCE IN MEN

PART II

Physical Causes. Treatment

WE have reviewed the *psychogenesis* of defective or destroyed potency. We have now to consider the *physical and organic* causes.

These may be classified as (1) Congenital anomalies, (2) General morbid conditions, and (3) Chronic toxic or bacterial infections.

Congenital impotence is generally due to unbalance of the endocrines, especially to inadequate activity of the testicles themselves, or those other endocrine glands which collaborate with the gonads—the hypophysis or pituitary and, to a slighter degree, the prostate and epidiogues.

Inadequate function of *all the secretions of the gonads*, both reproductive and hormonic, is the main cause of the impotence associated with *male infantilism*. But, in such cases there is generally very slight sexual impulse, and marriage is seldom undertaken. Therefore, medical practice is not often concerned with this form of impotence *per se*.

Far more frequent causes of impotence and sterility are general constitutional (*i.e.*, not specifically sexual) diseases, and chronic infections.

The best known disease affecting the whole organism in this manner is *diabetes*. The decline of sexual potency is often the first warning symptom in the diabetic man. Not invariably so, for many such men remain completely potent, but others, again, fail conspicuously in erectile capacity.

Chronic nephritis, in its later stages, is often accompanied by impotence. This is part of the general disintegration of the whole organism in such circumstances.

Pulmonary tuberculosis only involves impotence in its latest phases. In the earlier stages of tuberculosis, both the sexual impulse and the genital function are strongly accentuated.

General debility and asthenia, following exhaustion or feverish and inflammatory diseases, and diseases of the blood, often inhibit potency which, however, is restored with the recovery of health.

Obesity very often implies or gradually causes impotence. About forty years of age, when many men put on a decided increase of adipose tissue, impotence is quite common. The process is generally caused by inadequate endocrine function of the gonads (testicles), which causes obesity, or there is disturbed pituitary secretion, affecting the gonads.

Of great importance in the practical management of daily life is the effect of chronic excess in the use of narcotics: alcohol, nicotine, morphin, opium and cocaine. We must also not omit to mention *vocational or industrial toxins*, such as lead (Plumbism), mercury, bromides, iodides, salicylic acid and camphor.

Alcohol has a dual effect, according to quantity and habituation. In small amounts, it quickly excites both desire and potency. Large quantities impair erectile capacity, and chronic drunkards generally become quite impotent. But, before this final extinction of potency, the drunkard can, occasionally, have connection now and then in the intervals between bouts; though, when he has indulged his thirst, he generally feels acute desire, but cannot get full erections. Constant saturation with alcohol also affects the formation of the sperm cells, and adds real organic incapacity to defective mechanism. Meanwhile, the disharmony between the wish and the capacity for intercourse, with all its devastating results, suffice to ruin married life.

Immoderate addiction to tobacco (nicotinism) is also very harmful to the gonads: it also affects the nerve centres and thus injures potency both directly and indirectly.

Appropriate treatment of such conditions is based on the removal of the toxins, and on remedial, *i.e.*, counteracting

measures. This may be by the fresh supply of glandular substances, as suggested by *Berg*,[148] *Bloch*,[144-147] *Daniel* and *Fischer*[148] and *Mendlowitz*[149]; and by the application of general restorative tonics and (with due regard to other possible effects) of drugs which specially increase potency (see *Fleischer* and *Hirsch-Tabor*,[105] *Loewe*,[151] *Scheuer*[152]). Both tonic types, general and genital, may be tried even in certain cases where impotence is of neuro-psychic origin.

It is superfluous to name the most efficacious general tonics. I may, however, mention that, while my women patients have, generally, shown gratifying results from injections with arsicodyle or treatment with Levico, I have found that such men as have consulted me, benefited more by compounds of iron, arsenic, strychnine and quinine, of which *Burroughs and Wellcome's* " Iron-Arsenic Compound Tablets " are good examples.

In Appendix V. to the last and the present chapters, I have attempted a list of the chief medicinal preparations for restoring and increasing male genital potency, including endocrine compounds, but, of course, excluding the aphrodisiacs of legend and tradition.* The list is not exhaustive, nor must it be understood as a *recommendation* of the preparations mentioned therein. I only know some of them in the course of professional experience. I should be willing to make a trial of the others, if necessary, as I have confidence in the medical men who vouch for them, or the firms which prepare them, owing to other reliable recommendations or achievements; or because the special composition of these medicaments appears to me well thought out and likely to be efficacious. It may very well be, however, that there are other, similar preparations fully equal to or better than those I have enumerated. And, in any case, I urge the greatest caution: it is particularly advisable never to use aphrodisiac preparations without medical advice and medical supervision. *It must never be forgotten that there are no effectual specific stimulants of this kind which are not*

* See " Ideal Marriage," Chapter XV., pp. 276–280, for further illuminating details on this subject.—(Tr.'s Note.)

also strong poisons in more than very minute doses. Moreover, a disgraceful amount of trash is produced and patented in this line of goods. For, to men who are really impotent, no price seems too high to pay for recovery from their disability, and the sense of shame and inferiority which it implies. This profound feeling is exploited in many quarters, not only by the sale and advertisements of worthless and dangerous concoctions, but also of appliances and "treatments." It is impossible to state too emphatically that disturbed or diminished potency—if it is not a temporary effect of special psychical or bodily causes and, therefore, comparatively trivial, is a symptom of *disease*, and should be the occasion of prompt recourse to medical help.

We have already partially enumerated the very many *medical* accessory methods of treatment here. They include, first and foremost, rational and wholesome habits of life as regards work, diet, recreation, exercise and sleep, which are all of fundamental importance.

Then adequate and individually suitable regulation of sexual activity, or of partial or attempted sexual activity. Both the patient and his wife, and more especially the latter, should be entirely candid and explicit in their information to the medical man entrusted with such cases, and the doctor should be careful to inquire into and consider the case from all angles—psychological as well as technical. But, of course, the couple in question must understand the rudiments and indispensable *minima* of technique, and the medical adviser must have both psychological knowledge and perception.

In cases where I have been consulted on matters connected with the sexual side of married life, I have found it a valuable help (both in obtaining a *general impression* of the situation and a *preliminary insight* into its deeper causes) to request each partner to furnish me with as full a report as possible of their sexual life. These reports must, of course, be written separately. Whether the grounds for seeking my advice be sterility, or alleged wifely frigidity, or defective masculine potency, or other difficulties, either in actual

intercourse or in the general *climate* of their joint life—I now begin by asking each of the partners for as full a history as they can give me of their past and present life, both sexual and general, after having explained why I make this request, and indicated the points of special significance. I make it clear to both, with all the emphasis at my command, that neither husband nor wife may read the other partner's report, and that the contents of each document, whether referring to their marriage partner, or to other matters, are entirely safe and sacred with me. This is the indispensable preliminary, and the *only means* of eliciting *any* honesty or frankness; and I stress the need for such honesty and frankness. For I have, for some time previously, become convinced that, in many such cases, the trouble is not any individual delinquency of either partner—though such may be superficially much in evidence—but a malady of the *duplex marital organism;* a duplex organism of which the other partner no less a sufferer is as much an integral portion as the patient who comes seeking help. And even in such cases, where one partner is unquestionably either gravely at fault, or abnormal, or ill, or unhappy, the reactions of this patient husband, or wife, are obviously important to a complete diagnosis and helpful treatment.

If the partial or total impotence of either patient or partner is the result of some general morbid condition of the whole organism (such as diabetes or tuberculosis or pernicious anæmia), then the local treatment is combined with the general. But even in these cases, special attention must be given to so striking and depressing a symptom as genital impotence.

It will be evident that psycho-therapy is supremely important in the treatment of impotence. *I believe it is our main remedial method for such cases.* Even where the *precise occasion* of impotence is physical, psycho-therapeutic help *cannot be dispensed with,* by either the patient or his wife (and, generally, by both), without harm and loss. It is not, as a rule, necessary to stress the *healing* aspect of psycho-therapy; it suffices, in many cases, to give such aid *in the form of discussion and elucidation,* in order to prevent

or clear away serious consequences, or even to stop the local dislocation of function.

Next in order of utility comes pharmaceutical medicine, both general and specific (see Appendix V.).

Finally, we must not neglect other resources of modern science, and also take into consideration spa treatment, though we cannot here discuss these in detail.

The *local* treatment of male impotence is a highly difficult and delicate question: it is delicate, for it offers opportunities for quacks and charlatans of which they take full advantage; and it is difficult, because its value is respectively *maintained* and *denied* by high and equal medical authorities. For instance, *Orlovski* (153) warns neurologists not to assume psychic causation and conflicts in every case of impotence, as the origin is quite as often to be found in chronic inflammations of the posterior urethra and the *colliculus* or urethral crest, which are amenable to strictly urological treatment. On the other hand, not only psychological and psycho-therapeutic writers on the subject, but even so distinguished a urologist as *Posner* (154) are of the contrary opinion.* As a gynecologist, I have, of course, no first-hand experience in the local treatment of male patients, and speak from the outside, in this matter. But, on analogy with what we gynecologists often have occasion to observe as the psychological result of long continued local treatment in women, I should hesitate to recommend the corresponding treatment to definitely neurotic men. Of course, on the other hand, I recognize fully that *wisely individualized* local treatment can be most beneficial to both sexes. I have, therefore, made it a rule in my treatment of marital problems, when a case is caused or complicated by male impotence, to recommend the man to a specialist, whose views I know to be moderate and not extreme. In other cases, however, I send him to a psycho-therapeutist †

* *Cf.* the relevant quotations from *Furbringer* (155) in Appendix VI. to Chapters IX. and X.

† A work by *Gutheil* (156) proves the gratifying results of psycho-therapy as regards impotence. *Gutheil* says: "In general, these cases permit very favourable prognosis where there is a certain degree of experience

with an enclosed request either for treatment or recommendation to a specialist in uro-genital disease, if the psychotherapeutist finds the latter course advisable.

This consideration leads us to pass in review the last of our four categories: namely, impotence due to organic causes. The most important in destroying marital happiness and parenthood are chronic irritations or inflammations of the posterior urethra, due to excesses in venery or to gonorrhea. There are also certain anomalies of the external genitals, such as phimosis or scars and rugosites of the prepuce and *glans penis*, which are undoubtedly connected with inability to ejaculate. (*Cf. Fürbringer* [157]). Moreover, extensive and protracted inflammations may cause scars which make erections impossible. Finally, there are certain positive malformations which may make a man incapable of coitus, but these are very rare, and generally of themselves sufficient to exclude the possibility of marriage.

Male *sterility*, in its exact sense, the *impotentia generandi*, has two categories of very different and *practical* significance.

The first category is termed *aspermia*, *aspermatism* or *ejaculatio deficiens*, and the last designation seems to me the best, as it defines the exact defect in question.

There is *no absolute aspermatism;* which would imply that no secretions were discharged from either testicles, vesiculæ or prostate. The cases of so-called aspermatism are rather those in which the natural exterior channels are occluded or blocked. *Fürbringer* [158] points out that such results may arise either from organic defects of the genitalia, or from functional disturbance of the ejaculatory centres. Both groups of cases contain innate and acquired "aspermatics."

Ejaculatio deficiens can be caused when the minute orifices of the "Ductus ejaculatorii" are blocked, as happens

and efficiency. According to our experience, either complete cure or distinct improvement are achieved in between 70 and 80 per cent. of the cases treated. The residue of between 20 and 30 per cent. consists of persons who themselves prematurely stop treatment, among whom the treatment has to be stopped by the analyst, from external causes," (*Gutheil* is a disciple of *Stekel*) "and, finally, whose environment, or other characteristics make their restoration to sexual efficiency impossible."

sometimes, following severe local inflammations. In such cases the passage of the semen into the anterior urethra becomes impossible.

In yet other cases, the urethra is so contracted by strictures in its posterior section, arising through inflammations of gonorrheal origin, that the seminal fluid cannot flow into the anterior portion. Erection, orgasm and the muscular contractions typical of ejaculation are all normal, but no fluid is emitted. Only after the penis has relaxed is there a slight leakage—drop by drop, *if* the strictures are towards the *ostium urethræ*. Under usual circumstances this is, of course, useless for procreation. But, if the stricture is far back in the posterior urethra, the semen is forced back towards the bladder, and only escapes in the act of urination. Men affected in this manner are also, of course, sterile. Scars following accidents, wounds or operations or penile or prostatic tumours—if so situated that they press upon the urethra—can have the same effect.

There is not only an organic but also a functional, or psychological *Ejaculatio deficiens*. It is caused through sexual neurasthenia, severe mental or emotional shock, or excessive indulgence.

Erection and cohabitation are fully normal, but there is no ejaculation. The " orgasm without ejaculation " as defined by *Marcuse* [159] belongs to this particular morbid group.

Finally, there is a more extreme and congenital form of aspermatism ; *this is conditioned by complete paralysis of the ejaculatory centres*. In spite of erection and friction, neither muscular spasms, orgasm nor discharge occurs in coitus. This extreme condition is, however, very rare.

It is fortunate for remedial therapy that the most frequent cause of ejaculatio deficiens is stricture ; for these are best treated by the special methods of urology. In those cases, mentioned above, in which the fluid can only trickle out after subsidence of the erection, it may yet reach the woman's genital tract, and make fertilization possible, if the husband lets his organ remain in the vagina for some minutes after relaxation. And suitable adjustments during coitus may also assist here ; the best attitude is probably that of

Flexion (III.), if the man can retain his posture with comfort. And it is most important for the woman to have full mastery and tonicity of the perivaginal muscles. Obviously the *Constrictor Cunni* may be of the greatest assistance.* And there may be further artificial aid as suggested in Chapter IX.

The second main category of masculine sterility is characterized by lack of functional spermatozoa in the fluid. The mechanism of potency may be completely normal and an adequate amount of liquid is emitted, but, in this liquid there are either no living sperm cells (azoöspermia), or only a few (oligozoöspermia); or only feeble specimens, which perish before they reach their goal (asthenospermia); or there have been functional sperm cells but, when they are discharged they are dead (necrospermia).

All these modifications are relatively common; they are found among men who have neither suffered from serious general illnesses nor from local genital disease, venereal or otherwise. As to the causes, one can summarize them as follows: either there is inadequate gonadic secretion and lack of proper spermatogenesis, or the complicated system of minute ducts through which the spermatozoa normally reach the anterior urethra is occluded.†

Insufficient secretion of the gonads may be observed as an isolated peculiarity, and also in various general and local diseases. But these latter cases are not frequent enough for enumeration here. The most prominent are obesity and morphinism. Of recent years we have learnt of a relatively large number of serious injuries to the testicles, through Röntgen, radium and mesothorium rays. The victims are generally doctors or persons professionally employed in contact with radio-active substances.

The azoöspermia, which results from chronic alcoholism, is specially serious in marriage: not only impotence, but grave local lesions and impaired spermatogenesis may arise from chronic saturation with liquor. A gradual degenera-

* See the exercises described in Chapter V and "Physical Culture for Women," Sex Efficiency through Exercise.

† See "Ideal Marriage," Chapter VII., pp. 115–141, for a full description of the complex male genital apparatus.—(Tr.'s Note).

tion of the tissues of the tubules, and a final disappearance of the sperm cells, may make it eventually impossible for the drunkard to engender offspring, even if he should retain his erectile capacity. Unfortunately, however, nature does not automatically protect the race from contamination in all such cases, as is only too well known. But the results of controlled and prolonged experimental research on the reproductive effects of alcohol do not point *exclusively* in one direction.

The azoöspermia due to *occluded efferent ducts* is generally occasioned by *bilateral gonorrheal inflammations of the vasa deferentia or epididymes*. All other inflammatory affections of the gonads are comparatively unimportant.

Gonorrhea may be as destructive to possible parenthood in men as in women. The relevant statistics are eloquent. The process of gonorrheal infection is as follows in such cases: the invading micro-organisms cause an inflammation of the mucous membranes lining the anterior urethra. In the more fortunate cases, prompt measures lead to the healing of this condition; and it remains localized. But, only too often the inflammation spreads backwards, involving the upper or posterior urethra as well. Then the gonococci penetrate through the *ductus ejaculatorii* to the *vasa deferentia* and the epididymes, and the membranes become violently and deeply inflamed. When the actual inflammations subside, adhesions and malformations often result, which occlude the passage of the semen. In serious cases, both vesiculæ and prostate are also infected. But, as a rule, the *testicles* themselves escape and spermatogenesis continues. As we shall point out in detail in the following chapter, this circumstance enables *artificial insemination* to be performed by means of semen extracted from the testicles directly, and introduced into the uterus. Thus, sterility may be obviated in these cases.

It is also possible, by means of operative surgery, to remove the occluded portion of the *vas deferens*, and connect the normal portion immediately with testicles or epididymes *

* See Appendix VII. to Chapters IX. and X.

Oligozoöspermia and asthenospermia mean greatly reduced quantity or vitality respectively of the sperms. And this may mean failure to fertilize, as has been shown in discussing feminine sterility. Of the millions of spermatozoa normally discharged on each occasion, only the strongest and most active reach the interior portions of the female genital tract. Most of them succumb to the obstacles and dangers they meet. And if, at the moment of ejaculation, only comparatively few such sperm cells are emitted, or only such as are of feeble vitality and slow motion, the chances of survival are diminished, nor is it to be wondered at that no fertilization is achieved by such sperms.

Pathological changes of the sperm cells have the same practical results as oligozoöspermia and asthenospermia.

Williams and *Savage* have demonstrated that bulls in whose ejaculate there is an appreciable percentage of abnormally shaped spermatozoa, are less apt for breeding than others. The most important anomalies here are deformations of the *head* or rounded anterior portion of the spermatozoa; but there may be malformed or shrivelled (atrophied) tails or middle portions as well. *Mönch* [161] has proved that these conditions may exist and cause similar results in man as well; for spermatozoa are extremely susceptible to deleterious influences, and, therefore, it is not surprising that asthenic or deformed sperms are comparatively perishable and inept for fertilization.

There are also, and similarly inept, undeveloped or degenerate spermatozoa; and not only the outer form, but the *essential nucleus* may be misshapen or degenerate. There are Lilliputian sperms (dwarfed even relatively to the normal proportions of these gametes); atrophic or curiously bloated, granulous, or spotted heads, bifid or trifid forms; sperms with twisted or broken tail pieces. All these are functionally inadequate. If they do, nevertheless, succeed in penetrating ova, the resulting product, animal or human, has the likelihood of abnormal development. It has been proved that cows impregnated by bulls whose sperms are often abnormal are more than usually inclined to miscarriages. And we may reasonably conclude that in many cases of human

habitual abortion, the man, and not his mate, is the faulty element—(see Plate XII., Fig. 1, which reproduces the abnormal sperm forms depicted by *Mönch*).

We do not know exactly how these malformations are caused. The responsibility has been variously ascribed to general exhaustion of the whole organism, endocrine unbalance and disturbance, general illnesses and sexual excesses. It is certain that organic exhaustion and depletion may be important, for we find oligozoöspermia in men approaching extreme old age (senility). Inflammation of the gonads may also precede oligozoöspermia and asthenospermia, which form transitional stages to the disappearance or death of these gametes.

In necrospermia the cells are discharged in normal quantities, but they are dead or, at any rate, motionless. The reason is somewhat complicated: the testicles supply active and mobile sperms, but the specific secretions of vesicles or prostate have become morbidly affected, and the sperms cannot survive in this medium. In normal and healthy cases it is *the prostatic secretion which activates and energizes the sperms;* but, when this secretion is mingled with pus, it is so changed that the sperms are immobilized. They are then deposited in the vagina in an immobilized and morbid condition, and they perish.

To sum up: in *genital impotence* the most important contributory factor is *neurosis.* In *procreative impotence,* on the other hand, the most important contributory factor is *gonorrhea.*

We must emphasize the need of diagnosis and prevention here—especially of *procreative impotence* (*impotentia generandi*).

Obviously, the fundamental requisite for preventing procreative impotence is avoidance of gonorrheal infection. Every man *can* avoid such infection; and he would indeed do so if he could always visualize and remember what it probably implies. *For, gonorrhea is far from being the "trivial disorder" which many persons still choose to regard it.* Every man *ought* to avoid it, for his own sake

and for that of other, more defenceless, beings. And if it has, nevertheless, NOT been avoided, nor escaped, then, at least, no trouble should be too great in order to call a halt to the insidious progress of infection; and no man should consider himself cured until specialists have found *neither morbid symptoms nor gonococci, after repeated examinations and tests.* Experience teaches that all theoretical knowledge, and all good intentions may be, and often are, swept away by the elemental force of the sexual impulse; but, when the impulse ebbs, the mind is no longer clouded, and the harm has been discovered—then, at least, let men avail themselves of the help which modern medicine can give!

The exact diagnosis of marital incapacity for parenthood is so complicated that I have intentionally postponed mention of it till the end of the five chapters in which the isolated factors and aspects have been discussed.

Ought we medical men to undertake treatment of a married woman for sterility—even though we find her condition is one which we know may cause sterility—without investigating corresponding conditions in her husband?

And, *vice versa,* ought we to treat a man for supposed sterility without an examination of his wife?

Is not complete knowledge of relevant facts *in both partners* necessary in either case?

In my opinion *it is so necessary.* Even if one of the partners is obviously potentially or actually sterile—the sterility, in the circumstances, *is not theirs alone,* but affects the marriage bond and the other partner. What is the use of treating one partner when the cause lies in the other? Does it avail to cure sterility in one and not in the other? How is it possible to form an opinion of so important a dislocation in a complex double organism—a duality—if one only knows one side? And how even less possible to express such an opinion with authority!

Therefore, I conclude that, in all cases of sterile marriage, any examination should be made *of both partners.*

In practice I consider it right to carry out this principle from the commencement—that is, to take the semen for

the first microscopic inspection and tests, from the ejaculate deposited in the woman's organs.

There is a whole special literature on the best methods of obtaining this specimen material; and there are ingenious and appropriate instruments in which it may be transported, at a temperature which enables the sperms to survive. The various methods have their advantages and defects in detail, and each and all cannot be used in each and every case.

William H. Cary,[162] in an essay on the examination of sperms which is still of value, expresses himself in the following sense: Tests have proved that seminal specimens taken directly from the man, and apparently poor in motile sperms, may be strongly activated, if taken from the vagina where it is mingled with the normal coital secretions. Before a negative judgment is pronounced, a complete examination should include a test of the *physiological affinity of the male and female secretions*. In this view I entirely concur. I must add that there are cases in which the microscope reveals few motile sperms and many stagnant and deformed, in intermingled specimens taken from the vagina, whereas specimens taken from the man alone have a much healthier appearance. Such cases as these are illuminating, for they show that the woman's vaginal secretions are unfavourable to her husband's sperm cells; and, on this fact, advice and suggestions may be rightly and helpfully based.

Therefore I think spermatic tests should begin with tests of semen taken from the vagina, and if a subsequent specimen can be taken from the cervical canal—all the better. If numerous motile sperms are found, then it is demonstrated that the man can procreate, and that the woman's secretions have an affinity to his. But if such tests are impracticable, or if their results are unfavourable, a specimen must be taken from the male organ directly. And should the result of this be unfavourable, due discretion must be observed, and further and varied tests made, if necessary. The cells may have deteriorated in transport; or the man's general condition may have been "below par." Special external or individual factors may cause many more vigorous and normal sperm cells to be ejaculated on one occasion than

on another. I have touched on this subject in Chapter V., but would repeat and emphasize the influence of these factors once more.

APPENDICES TO CHAPTERS IX AND X

I. Notes on the Causation of Impotence.

Magnus Hirschfeld and *Schapiro* [164] analyse Potency into two main constituents: *tension or tumescence, and resistance to that tumescence.* Tension, here, implies the congestion and excitation of the whole sexual system, cerebral and peripheral.

Resistance includes all possible inhibitive or hindering factors: such as psychic complexes, organic nervous disease, whether central or local, and functional exhaustion. *Tension* may be decreased, disturbed or prevented by:

(1) Endocrine inadequacy of the gonads, congenital defect, mechanical, chemical or bacterial damage.

(2) Functional disturbances of other endocrine glands.

(3) Inadequacy or unbalance in the regions of the vagus and sympathetic.

(4) Anomalies of psychic individuality.

Disturbed or defective Potency (Impotence) arises through a disproportion between tension and resistance.

II. The Tragedy of Impotence.

A Norwegian writer, the late *Hans Jæger*, has given a profoundly moving expression of the tragic fate of a *neuro-psychic erotic invalid* in his auto-biographical work "Syk Kœrlihet" ("Sick Love"), which was published in Paris in 1899. He longed for human happiness with normal passion, but failed to experience what he desired, owing to profound psychoneuroses, for *Jæger* had a predominating tendency to Masochism.

He writes: "There she lies in my arms, motionless and silent, and waiting—waiting for me to perform the miracle which shall unite us. The miracle of Manhood—*which I cannot achieve*—for delight has stolen all my strength away. What hideous torment—that my very feeling for her and longing for her should make me helpless to express it, and hand me over, like a straw, to this tidal wave. No—in a flash I feel that I *can*—and then everything stands still, thought stops, I fall back shuddering and unconscious. And when, once more, I regain consciousness—oh no, no, it cannot be over, it cannot be irrevocable! But it *is* irrevocable, all my efforts are vain; I hide my face against her shoulder in an agony of shame. What can happen to me—to *us?* I lie, crouching on my elbow, staring into her face, where I read my verdict. All is lost, all is over! She cannot bear this

unspeakable experience again. Oh, if Death would take me, here and now ! I lie prostrate and bury my face in the pillow, and sob—and sob."

This description of the sufferings which ejaculatio præcox can entail, shows painfully that no men so deeply afflicted ought to undertake the responsibilities of married life.

III. Momentary Impotence.

A classic example of this is the adventure of *Jean Jacques Rousseau*, who visited the Venetian courtezan Giulietta, as he records in his " Confessions." He was full of ardent desire, but his deepest nature cheated him through the channel of his imagination. Hardly had she revealed her whole beauty, than a thought flashed through *Rousseau's* mind, which moved him to tears, and completely deflected his intention. The mental image changed and grew—his desire vanished—and a ridiculous failure resulted. The exclamation of the indignant and disappointed courtezan has become a proverb : " Lascia le donne e studia la matematica ! " (" Let women alone and study mathematics ! ")

IV. A Wedding Night (Bridegroom's Impotence).

Maupassant has a psychological study of the possible complications on a " first night," which is extremely acute and accurate.

A young bridal couple arrive at a Parisian hotel for their first evening together. They retire, full of ardour and expectancy, and the young husband embraces his maiden bride, but—the more fervent his desires, the less can he accomplish them ! A painful and humiliating position for any man : and he can only offer his excessive emotion as an excuse for his incapacity to a young, proud, and inexperienced girl, to whom both his bodily failure and his verbal explanation are alike incomprehensible. She laughs him to scorn and asks, in utter contempt and derision, " What, my dear, *is that all ?*—the whole Mystery of the Marriage Night ? " In utter depression and self-disgust, the young man leaves her and rushes out of the hotel into the street. And, in the street, a pretty graceful *cocotte* comes towards him, smiling. In his *débâcle* of self-confidence and his acute anxiety, the resolution comes to him, like a flash, to prove definitely whether the vigour and virility of which he has been hitherto so proud, are, indeed, lost for ever. He follows the *cocotte* to her abode, and—with her, he succeeds at once in the act which was impossible half an hour before, with his bride. Full of joy, relieved of fear and restored to self-esteem, he returns at once to the bridal chamber, and initiates his quivering and half-swooning bride with entire success !

This little story may well have been taken straight from life. Its psychological mechanism is comprehensible.

At the crucial moment, the young man's over-stimulated nerves suddenly " refuse." His vexation and shame make him afraid ; he cannot understand what has happened to him, and this fear completes his failure. Tender sympathy and understanding could have helped him through so painful an experience with ease. But he meets anger and contempt. A neurotic subject would have fled from the scene of his defeat with utter but resigned despair, or, if he had summoned up courage for another attempt, he would fail again and always, having lost all faith in himself. But the normal virile man, though his offended pride drives him from his wife's side, seizes the first opportunity of testing his manhood afresh.

And, in the case of the hired and casual stranger, where he feels neither profound emotion nor instinctive reverence ; with a woman who has neither the cruelty of maidenhood nor its particular appeal—he succeeds at once. And the belief in himself, and his powers, explains the end of the story.

But, I would earnestly ask my readers to take this story to heart, as illustrating the harmless and trivial nature of such occasional impotence, *but NOT as offering an example to be followed !* There are far too many and too serious considerations against such a course of conduct, in actual fact.

V. Some Pharmaceutical Preparations, recommended by the firms responsible, for increasing Male Potency ; only to be taken as prescribed and under the control of the physician.

(1) *Testicular Compounds.*

Testifortan. Tablets and Ampoules. (Promonta, Hamburg.)

Testiglandol. (Grenzach.)

Testogan. Tablets combined with extract of the Anterior Pituitary Lobe, Thyroxin (gland thyroid), Calc. hypophosph. and Yohimbin. (Henning, Berlin.) (Cavendish Chemical Co., London.)

Testanon. (Organon, Oss.) (H. W. Braun, London.)

Spermin Pœhl. (Chemically pure, effective ; *but not equal to hormones !*) (Poehl.)

Dynotabs Thygon Spermin. Pluriglandular Tablets. (Hormones & Chalones, London.)

Testrones. Glandular Tablets. (British Glandular Products, London.)

Testacoids. Testicular Hormone. (Reed & Carnick, New York.) (Coates & Cooper, London.)

(2) *Yohimbin Compounds.*

Yohimbin-Spiegel. (Chem. Fabrik, Güstrow.) (H. W. Braun, London.)

Dynambin-Papaverin-Yohimbin-Tartrat. (Synergon, Frankfurt am Main.)

Yohimbin Tablets. (Clayton Aniline Co., London.)

Yohimbin hydrochlor.	0·005
Calc. phosph.	0·1
Strychini. nitr.	0·002
Radic. zingib. pulv. Eleosacch. vanill. ana	0·02

Yohistrin masc. (Sanabo–Chinoin, Vienna).

Yohimbin	0·003
Strychnine	0·005
Calcium	0·001
Hormon. Masc.	1·0

(3) *Muiracithin Compounds.*

Erectol Tablets. (Sarsa, Berlin.)

Extr. muir puamæ	0·1
Ovolecithin Merck.	0·05
Quin. glycerophosph.-Ferr. glycerophosph. ana	0·025

Tablets: Puamæ Compos. (Sarsa, Berlin.)

Extr. muir puamæ	0·1
Yohimbin. muriat	0·005
Lecithin.	0·05

VI. Potency and its Disturbances. Extract from *P. Fürbinger's* [155] article in *Marcuse's Handbuch der Sexualwissenschaften* p. 573.)

"There is keen controversy, as to whether *chronic inflammations in the posterior urethral* region, above the *Colliculis* (*urethral crest*), whatever be their origin, are capable of causing reflex lesions of the coital centres, which amount to serious impotence. Eminent urologists are convinced of this interaction, but the most experienced neurologists are equally certain that no adequate proof has been offered. . . ."

"My (*Fürbinger's*) experience prevents agreement with *Orlovski's* conclusions; and the result reported to me by various persons who were said to be 'cured' is also not reconcilable. Of course, I do not wish to deny that anatomical processes in the posterior urethra often play a part in 'nervous' disturbances."

"A very recent pronouncement by the Urologist *O. Schwarz* is significant. He believes that the overwhelming majority of cases of genital incapacity are not *somatic* but *psychogenic*, and that their treatment, in the future, must be on psycho-therapeutic lines."

VII. Restoration of continuity of vasa deferentia and epididymes. (*Fürbinger*,[155] p. 753.)

" Clinical experiments have proved that the severed seminal duct may be linked up again with the urethra, and that a functional anastomosis may be achieved by forming new channels between vasa deferentia and testicles or epididymes. As early as 1904, *Enderlen* proved the viability of the severed and restored *duct* in male dogs in a complete manner, as I was able to prove through examination of his results.

" *Martini* has furnished an impressive report on the results of extensive experiments, both by himself and others, including various operative methods.

" *Haberland* and *Stutzin* have, however, demonstrated the possibility of occlusion, through fibrin and cicatrization, in their latest work. Successful experiments on animals have raised hopes which often fail in human beings, for, in men, the possibilities of restoring potency are far less favourable, in those instances where multiple strictures and occlusions are of *gonorrheal origin*. Nevertheless, although some of the boasted ' triumphs ' in this field cannot stand informed investigation, there are individual instances of complete success (excluding all possibility of third-party intervention).

" *Delbet* and *Lydston* have such cures to their credit. The improvement of technique may justify the expectation of further successes in *Vaso-Orchidostomy* (inaugurated principally by *Posner*) which has hitherto been regarded as a ' chance hit ' ; but which cannot be refused as a last resort, and when a despairing patient asks for it, for the operation does not endanger life, and is theoretically reasonable. But, in granting the patient's request, we must make clear that the operation is *speculative* ; we must never let them believe that a happy result which is *possible*, is at all certain."

CHAPTER XI

ARTIFICIAL FERTILIZATION, OR INSEMINATION

ARTIFICIAL fertilization (or rather *artificial insemination*) is a last resort in the treatment of certain forms of individual sterility in both partners. This method *excludes* the physiological act of intercourse, and approaches the sperm-cells and the ovule, by external or artificial means.

Artificial insemination, however carefully planned in detail, often fails in practice. For, fertilization does not only imply the invasion of vagina and uterus by the male cells, but also includes many other factors, some of which we understand but cannot control, and some of which we do not understand, and perhaps never will know. Nevertheless, in spite of all our *lacunæ* in knowledge, and the difficulties in technique, a considerable number of successes have been achieved, and artificial insemination has won an established and recognized position in the clinical field.

The term artificial fertilization has also won recognized use, so we will employ it ; *though, in its exact sense, fertilization means the merging of sperm and ovule, a process occurring independently of human sight and will, beyond volitional control.*

Artificial insemination is only practically applicable within legal marriage, although there have been cases in which unmarried women, with an overwhelming maternal instinct, but an intense religious or conventional inhibition against intercourse outside marriage, have begged medical men to perform this operation and enable them to bear children. These cases throw interesting lights on human nature, and not least by showing how profound the maternal instinct *can* be. But it will be necessary for the doctors in question to refuse, on account of many considerations, which we cannot enumerate here.

When both partners to a legally recognized and responsible union express the wish to have artificial insemination performed, these objections do not arise. In some cases, indeed, artificial insemination gives the only possibility of deeply desired offspring.

As we have already pointed out, sterility may be of crucial importance in married life. It may lead to difficulties about inheritance or to psychic unbalance and distress in the wife, or the husband as well. Therefore, in my opinion, the operation we are considering, if conditions make success likely, is completely justified and legitimate.

The first recorded success in artificial insemination was achieved by *Spallanzani*, the Italian *savant*, in 1780. He operated on a bitch, for his religious beliefs and priestly vocation prohibited human experiment to him. *John Hunter*, nineteen years later (1799), injected seminal fluid from a man with a malformed urethra into the vagina of the man's wife, and this simple procedure had the desired effect. Then the operation was neglected and forgotten in the profession—or none were found willing to accept the odium of anything so "profane and blasphemous." The great American gynecologist, *Marion Sims*, revived and perfected artificial insemination (1866) by injecting the semen directly into the uterus. After several failures he achieved positive results, and was able to record the first successful modern human fertilization by artificial means. Since that time, the procedure has been seriously considered: in 1891, *Bossi* [169] could credit eleven cases with nine successes, and he was immediately followed by French, German, Swiss and Spanish colleagues, who had a considerable percentage of good fortune in their results.

But artificial insemination only became an integral factor in the clinical treatment and descriptive literature of sterility, in consequence of the surprising successes of *Ivanoff* and *Döderlein*. *Ivanoff's* operations were on mares, and *Döderlein's* [170] on women. The latter experiments attained publicity in lay circles. In 1909, *Ivanoff* had developed his technique so far that he succeeded in producing more arti-

ficial than natural pregnancies. But his subjects were mares, cows, heifers and ewes, and, in these animals, anatomical circumstances are more favourable than in human subjects. *Rohleder* [171] has specialized in artificial insemination in human beings; he executed many successful operations, and we also owe the most detailed monograph on the subject to him. I would refer those interested to this "Monographie über die Zeugung des Menschen" ("Special Study of Human Reproduction").

Of the 175 cases recorded in medical literature, 57 were successful: that is, 30 per cent. The failures have been for a certain part undoubtedly due to a wrong selection of persons. Here we must agree with *Rohleder*. For example, it is obvious that bilateral occlusion of the oviducts would make all attempts at artificial insemination quite vain. Nevertheless, the percentage of successes is, on the whole, encouraging. If we bear in mind that the surgical operations against sterility show an equally high percentage of failures, that most of the cases in which insemination has been used were of several years' duration, and, finally, that many of them occurred some decades ago—before our technique was on the level of to-day—we may indeed feel that the results have been promising.

Artificial insemination may be suggested by either husband or wife. Men may be incapacitated for fertile coitus by all the afflictions mentioned in our two preceding chapters, by local malformations, and by the results of bilateral epididymitis following gonorrheal infection. In women, the chief obstacles are mechanical or chemical conditions of vagina or cervix, which block the passage of the sperms. Moreover, artificial insemination is justified if no reasons can be found for the failure of impregnation, and both gonads and, so far as is possible to judge, their products have been found normal in either partner.*

But artificial insemination should not be attempted if one of the partners suffers from any disease or defect which causes danger of sub-normal or seriously damaged germinal

* See Appendix I. to the present chapter.

development. The medical man must use his best knowledge, and deepest sense of responsibility, in each case, and if there is reason to doubt the eugenic justification of the experiment, it is his duty to give the couple the fullest explanation of possible consequences, in order, if possible, that they may form their own conclusions. There are also some diseases, and hereditary dysgenic factors, of which there is no permissible doubt that they forbid artificial insemination. As an example of the first category, I would mention syphilis, whose cure was not entirely certain ; and, as an example of the second, *hæmophilia*. Moreover, I concur in the view of those authorities who would set up a stricter standard of fitness in artificial insemination than in spontaneous natural generation. This seems to me an obvious duty. We must always exercise more deliberate discrimination in weighing the pros and cons of actions wholly within our own choice, than in facing the consequences of physiological processes. Accordingly, I endeavour to exercise eugenic discrimination, not only in cases of artificial insemination, but in all attempts, surgical or clinical, to promote desired but deficient fertility. But I should not be prepared to refuse to undertake artificial insemination, in all and every case, where illness or inherited tendencies *might possibly* emerge in the offspring. As so often occurs in the practice of our profession, here we must give due weight to just and natural interests, and desires of the most varied kinds ; we must draw our final conclusion without prejudice and both advise and act accordingly. I can imagine cases in which I should not refuse artificial insemination, even if certain eugenic doubts could not be denied. Let us not blink facts : who, among us all, has a heredity free from *all* taint ? From the strictly eugenic point of view, who, among us all, would have the right to bring new life into the world ?

As to the technique of insemination : we have learnt the advisability of introducing the seminal fluid into the uterus itself. *Vaginal* insemination is only practised in a very few cases to-day. We have already touched on them, but they are no longer classified as artificial insemination.

It is, of course, necessary to assure oneself of certain indispensable pre-requisites, if the procedure is to have a chance of success. The man must secrete normal, motile, functional sperms. The woman must secrete and extrude normal functional ova. The ova are not demonstrably present under the microscope (in contrast to the multitudinous spermatozoä), *but we are justified in assuming normal ovulation if there is regular normal menstruation.* Other requisites in the woman are free passage in the upper genital tract, so that the gametes may fuse; and a sufficient normality of structure in the uterus and its adnexa, the ovaries and tubes.

The aptest method is that most near to natural function. *Rohleder* and others, bearing in mind the importance of voluptuous excitement and orgasm in women, as an aid to conception, have recommended that the operation of "insemination" should take place immediately after the wife has been stimulated locally by her husband. If possible, she should have been fully roused and satisfied in coitus; but, if complete coitus is impossible, there should at least be sexual contacts approximately resembling normal intercourse; and, failing these, orgasm should be induced by stimulation of the clitoris.

This recommendation is certainly theoretically sound, but it can only be really helpful if it is possible to introduce the sperms into the uterus immediately after the woman's orgasm has occurred.

Everyone who puts himself in the place of either the physician in charge of such a procedure, or one or both of the marriage partners, will realize how difficult is the co-ordination of all factors necessary to success in so intimate, complicated and difficult a situation. It is, for example, of some importance, whether the insemination is effected in the home of the married couple, or on the premises of the physician. Of course, it is generally more convenient for the latter to have everything to hand, but the husband and wife are both apt to prefer their own home, and this circumstance tends to help the necessary processes. It also makes it easier for the woman to rest in bed in the horizontal position for some

hours after the operation. And, if the domestic premises in question are not too unsuitable, it is quite easy for the doctor to transport and use everything necessary to his part of the procedure. He may as easily " operate " on the patient across the edge of a table or bed, as on a gynecological examination couch. How often is he not bound to undertake more difficult duties in the homes of his patients ? Is it then not perfectly practicable to introduce the cannula of a uterine spray into and above the interior *os* ?

There are various ways of obtaining the necessary seminal fluid. All have their advantages, and, equally, their disadvantages.

The most natural and advisable way is as follows : Coitus should, *if possible,* take place in a normal manner and the woman should certainly share in the orgasm. Immediately thereupon, the doctor, who waits in an adjacent room, should be summoned, the woman placed in position on the edge of the bed, and a previously warmed speculum introduced, which reveals the *portio vaginalis uteri.* The uterine spray, which should also have been properly heated beforehand, is introduced, and some of the ejaculate is drawn into the mouth of the spray. The portio must then be grasped by a tenaculum forceps, the cannula of the spray passed up through the cervix until its extremity is *at least* above the interior *os* (that is, just inside the uterine cavity, and I recommend a slightly deeper penetration), and then a *little* of the seminal fluid should be slowly injected into the uterus. *Döderlein* emphasizes " *a little* " ; *one or two drops* of semen.* The cannula should be left motionless for a few minutes, and then very slowly and carefully retracted, the *portio* released, the speculum removed and the woman put into the horizontal position with as little movement as possible, and kept quiet in bed for the day.

But, in order to carry out this exactly, (*a*) there must have been an emission of functional spermatozoä into the

* The customary syringe spray known as *Braun's* is, as a rule, too large for the injection of so small a quantity. I recommend the use of a smaller appliance.

vaginal vault, and (*b*) the insemination must have taken place in the conjugal domicile; unless, indeed, by an exceptional chance, the doctor could place adequate rooms at their disposal, as, for example, in a private clinic, where the necessary heating of the instruments could also be more conveniently carried out.

There are certain precautions to be observed.

Before intercourse takes place, the woman should douche her vagina with *Ringer's* solution. The recipe for this solution is given under Appendix II. at the end of the present chapter in a brief extract from an article by *Sellheim*.[172] It has no *antiseptic properties*—antiseptics would injure or destroy the sperms—but as a *mechanical cleansing agent* it is quite as effective as the swabbing of the vagina. And there is the further advantage that the solution is an excellent medium to preserve the sperms, and serves also to make the consistency of the ejaculate thinner and easier to capture in the cannula.

The method of *coitus interruptus*, followed by ejaculation into a vessel placed ready for the purpose, has only one merit: the ejaculate can be more easily drawn into the cannula; but the many drawbacks generally rule it out.

Coitus Condomatus is more usually employed, and the fluid collected in the French letter is then transported with the necessary care. Before use, the condom should be cleared of powder and rinsed with Ringer's solution. And the sperms must not become cold before they are injected. These considerations are against Coitus Condomatus.

If the seminal fluid is obtained through self-relief on the man's part, it can be discharged into a sterilized vessel. This procedure has certain incontestable practical advantages; but it offends against the moral standards of many persons, and is æsthetically so repugnant that the physician can only suggest it with great caution. But, if insemination is earnestly desired, we must face the fact that there are quite a number of cases* in which the semen can only be

* *E.g.*, defective erections; and see also, in Appendix I., Indications 1a, and 2b.

obtained (*a*) by masturbation, or, by (*b*) puncture of the epididymis.

The penis must previously be most carefully washed and cleansed, and the hands also. Of course, the doctor must cleanse his instruments in the manner obligatory before any intrauterine insertion,* to avoid risk of bacterial invasion; and the marriage partners must also take due precautions.

The male fluid must be *slightly diluted*, except in cases where there are abnormally few active sperms. The dilution can either be with *Ringer's* solution or one of the "spermotactical" substances already mentioned in this book. *Mettenleiter* ([173]), ([174]) recommends a 5 per cent. (5%) solution of grape sugar, and also a microscopic inspection of the spermatic fluid, both before and after injection, in order to test whether the injected spermatozoä were motile or not. This *later* inspection seems to me neither absolutely necessary, nor always practicable. But it would be well, in the microscopic tests which must precede the decision, to try various blends of spermotactical liquids, in order to see which suits the sperms best. A diluted liquid is better for the uterus than the natural viscous mass.

When normal fertilization is impossible, because the male cells do not become mixed with the accessory secretions and expelled in coitus, the only practicable way of obtaining them is by *puncture* of the epididymes. Generally, they are present in the Tubules for years after the normal exits are blocked.† But, when the sperms have been thus obtained by puncture, there must be a *mixture* with either one of the solutions mentioned above, or with prostatic secretions, for the sperms normally secreted in the tubules of the epididymis are *capable of motion, but only activated into motion* by the prostatic products. As we have had occasion to mention, there are possible artificial compounds which can replace the special effects of prostatic secretion. In certain cases the dilution of sperms obtained by puncture, with the ejaculate deposited in the vagina—(*and, there-*

* As for *sterilization* of the instruments, we must bear in mind that neither water nor effective chemicals may be brought into contact with the sperms.

† See the previous chapter.

fore, containing normal prostatic secretions)—might well be considered.

Special mention is due to the method by which *Dickinson* [175] introduced the spermatic fluid directly into the tube by way of the uterus. *Sellheim* developed this procedure by the construction of a special instrument, the "*Tubal Inseminator*," which can be attached to the "*Tubal Insufflator*," * so that the semen could be insufflated into the tubes. He is of opinion that the number of sperms which will reach the abdominal cavity will cause no danger provided that the whole procedure has been carried out without infection. I should not be prepared to recommend this procedure.

L. Fränkel [176] even went so far as to suggest the introduction of sperms (obtained by puncture of the male gland) into the abdominal cavity, by means of a laparotomy, in order that they might be in the immediate vicinity of the ovaries. Another suggestion from another quarter is the *injection of semen, straight* through the posterior vaginal vault, into the *Cavum Douglasii*; that is, also into the peritoneal cavity! This procedure would simply gamble on the chance that the *leucocytes* would not destroy *all* the sperms, but that some would penetrate into the tubes—through the *bell mouth* extremity. But what if the fertilized ovum *did not* pass into its natural nesting place, the womb?

I mention these suggestions for the sake of completeness of exposition; but their practical value seems to me very slight.

A method of less drastic nature than the *uterine insemination* we have assumed to be normal in artificial fertilization, is *Pust's* [177] suggestion. He recommends that sufficient seminal fluid should be deposited in one of the *portio cap pessaries* (see Plates XVIII. and XIX., and Chapter XIV.), and the pessary then at once placed in position on the extremity of the cervix. *Pust* recommends that the cap should be left in position for twenty-four hours. I consider this too long an interval, in view of the probable development of products of putrefaction.

* See above, Chapter VIII.

The exact time and season is important, as well as specific technique. There are two dates which are favoured by specialists for the performance of artificial insemination: some prefer the immediate cessation of the menstrual period, others the conjectural date of ovulation. In consonance with my views on the importance of ovulation, I should recommend about the twelfth day of the intermenstrual interval. But it must be admitted that "early insemination" has also a goodly crop of successes: perhaps because the uterine secretions are then very favourable to the survival and transport of sperms. The experiences of artificial insemination have given additional proof of the long time during which the spermatozoa can live and move in the upper genital tract, womb and tubes.

The woman's orgasm is of extreme significance for insemination. If it is probable that it will occur, we should be able to try a date forty-eight hours earlier than the twelfth day, in the hope that the spermatozoa would then be launched to meet not only an ovule which had been extruded early—and *early* ovulation is *constitutional* in some cases—but also the ovule from a follicle ruptured in the convulsion of orgasm. And, when repeated efforts have to be made, it is wise to try the favourable effect of the post-menstrual uterine secretions. For, as artificial insemination is a *very crude imitation of a highly intricate and spontaneous natural process*, we must not be surprised if it fails in the first attempt. And, as no one accepts this procedure unless they want children—whom they have failed to produce under normal conditions—there must be some particular inherent difficulties. So, we must be prepared to repeat the process, if necessary. I suggest a second insemination at an interval of four weeks, if the first has obviously failed; and not more than five or six in the course of a year—varying the dates in the monthly cycle. If this number fails, it will be well to desist. And it is unlikely that the marriage partners can tolerate so many successive failures, for the whole situation is extraordinarily trying both to the modesty of the woman and the intimate susceptibilities of the man as well, and can only be handled with the greatest delicacy by physicians

who have not only wide knowledge of humanity but much intuitive sympathy and tact.

There are, in my opinion, no acceptable ethical or juridical objections *in principle* to such insemination, as has just been described.

The use of the semen of a third party raises complex problems. In such a case, the complete and explicit agreement of all three persons, woman, husband and the man who supplies the vital fluid is a *sine qua non*. Even so, I should prefer not to be responsible for the operation, as, if *" successful," it might lead to profound psychological complications and reactions of a disastrous kind*, for which I should feel partly responsible. In other members of the medical profession, there are traditional, ethical and religious objections to such a course. But it is also possible to take a very definitely affirmative view here, as is exemplified in the quotation from *Dr. Magnus Hirschfeld's* (178) work on " The Science of Sex " (" Geschlechtskunde ").*

To my knowledge, the only religious body which has specially reprobated artificial fertilization is the Roman Catholic Church. According to the decree of 26th March, 1897, it was forbidden.† But *Noldin's* famous, often quoted and detailed work on Moral Theology states that this prohibition only refers to *special technique*, involving masturbation or emission outside the feminine organs. The other method of insemination is expressly permitted: the reference is par. 77, p. 80, of the latest (1927) edition of Noldin's work.‡

To sum up: we may maintain that artificial insemination is *unobjectionable*, medically, juridically and ethically (as well as from the standpoint of traditional religion, with certain reservations). It enables us to heal cases of sterility, in which all other efforts have failed, or must fail. Its use is strongly indicated in certain circumstances. In the interests of human happiness it is desirable that the prejudice, which still exists in non-medical circles on this subject,

* Appendix III.
† Appendix IV.
‡ Appendix V.

should give way to juster appreciation, and that medical men should recommend and employ it more often than is at present the case.*

APPENDICES TO CHAPTER XI

I. Indications for Artificial Fertilization, according to the Chapter on "*Sterility*," by *Nürnberger* in *Halban Seitz* "Handbuch der Gynäkologie und Geburtshilfe" (Manual of Gynecology and Obstetrics), Volume III.

(1) *In the Man.*

A.—When there are hindrances to the discharge *per Vaginam*;

(*a*) *Erectile defects and disturbances*: abnormally slight penile development; abnormalities of position, as in hernia, obesity, hydrocele; abnormal bends or twists in the member; induration of the corpora cavernosa; epispadias, hypospadias; deficient erectile capacity due to diabetes, obesity, disturbed metabolism; disturbances of the cerebral or spinal mechanism, leading to psychogenic impotence; finally, impotence resulting from tabes dorsalis and other spinal lesions.

(*b*) *Ejaculatory defects and disturbances:* ejaculatio præcox, ejaculatio *ante portas*, aspermatism.

B. Conditions occluding the passage of the sperms into the ejaculate. Congenital or acquired obliteration of sperms.

(2) *In the Woman:*

A. Conditions preventing the ascent of sperms into the uterus.

(*a*) Pathological structural conditions, causing ebb of spermatic fluid outwards, after coitus.

(*b*) Contractions of the *os externum uteri*, and similar anomalies.

(*c*) Destruction of the sperms in the vagina, owing to pathological changes in the feminine secretions.

B. Conditions preventing reception of sperms into the vagina:

(*a*) Sthenoses of vulva or vagina.

(*b*) Psycho-sexual resistance: vaginismus.

II. Extract from *Sellheim's* Essay, "Fertilization, Infertility and its Treatment," in the *Zeitschrift für Ärztliche Fortbildung* (*Post-Graduate Medical Journal*), Year 21, No. 22.

* See references in the Bibliography from 179 to 181.

"For the purpose of reactivating stagnant sperms, I would recommend *Ringer's solution* (Na.Cl. 8·5 ; Na.H.CO_3O.$_1$ Ca Cl.02 KCl. 0·08, Aq. dest. 1000·0) on the personal recommendation of *Abderhalden*, rather than the so-called physiological saline (muriatic) solution, which is harmful rather than favourable, though formerly much in use. At least, *in vitro*, we may observe the effects of *Ringer's* solution, in accentuating the motility of sperms already active, in restoring sperms stagnant for hours to renewed movement, and the same effect is shown when the ejaculate is diluted with *Ringer's Solution.*"

III. Extract from "Geschlechtskunde" ("The Science of Sex"), by *Dr. Magnus Hirschfeld*, Vol. II., p. 407.

"There are occasional instances of a desire for children so deep and dominant that, if the semen of the woman's husband cannot be obtained or used, in artificial fertilization, that of another man is suggested as a substitute. Most persons shrink from the simpler expedient of actual coitus with a virile third party, for the act of intercourse appears to them to constitute *possession*, whereas the artificial introduction of the male seed seems more *impersonal*, and not incompatible with marital fidelity and unity.

"And, indeed, as the intention and purpose of such artificial insemination with sperms from another healthy man is ethical and altruistic, the process cannot be reprobated, either from the eugenic or the strictly sexual side. Provided always, and, of course, that the persons concerned are aware of the nature and possible consequences of such action, and decide on it whole-heartedly, after full consideration. In any case, physicians would do well, before performing this operation, to provide themselves with an explicit written statement, properly signed and witnessed *from all three persons concerned*, of their knowledge and consent—as suggested by both *Rohleder* and *Wilhelm*. Otherwise, there may be most unwelcome consequences and complications."

IV. "Acta Sanctae Sedis," Volumen XXIX, pagina 704. Dubium quoad artificalem foecundationem. Feria IV, die 17 Martii 1897.

"In Congregatione Generali S. R. et U. J. habita coram Emmis ac Emmis DD. Cardinalibus contra haereticam pravitatem Generalibus Inquisitoribus, proposito dubio:

"An adhiberi possit artificialis mulieris foecundatio?

"Omnibus diligentissimo examine perpensis, praehabitoque DD Consultorum voto, iidem Emmi Cardinales respondendum mandarunt;

"Non licere.

"Feria vero VI, die 26 eiusdem mensis et anni, in ec

Audientia R.P.D. Assessori S.O. impertita, facta de suprascriptis accurata relatione. SSmo D.N. Leoni Pp XIII, Sanctitas Sua resolutionem Emmorum approbavit et confirmavit.

" J. Can. Mancini S.R. et U.J. Notarius."

V. Translation from *Noldin*, Section 77 " Of the Sixth Commandment * and the Conduct of Matrimony." Edition XXI

" Artificial fertilization or fecundation is that by which the male seed is introduced into the womb without complete sexual intercourse. In general, this must be considered illicit and not allowed.

" A. The first to show that fertilization in an artificial or mechanical manner was possible was *Spallanzani* of Modena, a Priest of the Church, and Professor at the University of Pavia. He introduced the seed of animals into the wombs of their mates with successful results. The same experiments have been and still are performed by physicians on human beings, when married couples wish for children, and the wife is apt for conception but the husband unable to perform sexual intercourse in a complete and normal manner.

" B. As the wife is only permitted to receive the seed of her husband, it is assumed that the process on which enquiries have been made, refers to such conjugal fertilization only. This can be and is operated in two ways, as follow :

" (*a*) The first method consists in the performance of sexual intercourse and withdrawal before emission of the fluid is then discharged into a vessel and the physician introduces it into the womb by means of an instrument. This method is illicit and forbidden, as involving onanism and emission outside the vagina.

" (*b*) The second method consists in the discharge of the male fluid into a vessel, without any sexual contact the physician then introduces the fluid into the womb This method is illicit and forbidden, as involving voluntary and intentional pollution.

" (*c*) The woman may, however, lawfully and without offence, permit artificial fertilization, for the avoidance of grave evils, as she does not actively participate, but passively receives.

" (*d*) There are two kinds of fertilization, which may be termed *artificial*, but are, nevertheless, lawful and allo

" In the first of these, the husband introduces an instrument into the female parts, which serves either to distend the vagina

* The Vulgate Version of the Decalogue makes the Commandment Seventh in the English Bible, the Sixth.—(Tr.'s Note.)

or to correct a displacement of the womb; then husband and wife perform in the natural act. This is lawful and allowed, as the purpose of nature is assisted. The second lawful method consists in natural intercourse and emission of seed in the vagina, but the physician collects the fluid in an instrument, by which it is introduced into the uterus. This too is permitted and lawful as, after a natural act has taken place, the individual defects of nature are relieved and supplemented by means of an instrument. A third method, of which I know not whether it has been actually practised, is mentioned by *Vermeersch* *: the seed is drawn out of the testicles by puncture, and introduced into the uterus by an instrument. As it avoids pollution, this method would be lawful and permitted.

"*Vermeersch* † and *Sanchez* ‡ are of opinion that even illicit artificial fertilization within matrimony constitutes a consummation of matrimony, if offspring result therefrom; for they hold that marriage is consummated by the reception of the seed in whatever manner this may be accomplished. *Gasparri* § denies this, and rightly so. For marriage is only consummated by sexual intercourse, namely, by penetration and emission. Therefore, matrimony is not even to be regarded as having been consummated, when offspring are born from seed deposited outside the vagina by the husband."

Second Intermezzo of Aphorisms

I.

I am sure you deeply regret and grieve with me that the interests of true religion should ever be endangered by weak but well meaning men believing and urging that new improvements in medical knowledge, or in general science, are against the words or spirit of Scripture. We may rest fully and perfectly assured that whatever is true in point of fact, or human and merciful in point of practice, will not find condemnation in the word of God.

James Simpson. ||

* *Op. cit.*, Nos. 241, 243 (references).
† *Op. cit.*, No. 240. End of book.
‡ Book 7, Part 99, No. 37.
§ II., 1302.
|| These words were written by the great physician in 1871, in defence of the use of chloroform as an analgesic in childbirth. Clerics had attacked this use of chloroform as contravening the Divine decree: "In sorrow shalt thou bring forth children," and, therefore, "unnatural" and "against the will of God."

May not *Sir James Simpson's* words be equally applied to those persons in our own day who attack the use of contraceptives, *in all circumstances*, as "unnatural" and "irreligious"?

II.

Morality has altered its appearance in various ages and stages of history, and even between contemporaries, its demands are often exactly contrary in nature, though defended with equal conviction and equal passion. In spite of the often emphasized non-ethical spirit of science, this same science begins to take on a moral complexion when it approaches the border line of sex. And this does not promote the reliability or impartiality of its results.

Wilhelm Reich.

III.

Ignorance has never yet solved any problem.

Disraeli.

IV.

All normal people have children, whatever newspapers may say. The woman in love with her husband longs to lay his first-born son in his arms. But she does not want to ruin her health or wreck her life by having more children than she can possibly bear healthy, or conscientiously bring up as she should.

Mrs. Huth Jackson.

V.

Perhaps a future generation of doctors will have learnt to apply prevention of pregnancy as a *means of healing.*

Mensinga.

VI.

With all his wonderful achievements, man can never escape from the fact that he is himself but a product of the earth on which he lives.

Harold Cox.

VII.

I do not advocate birth control in order that people may shirk the responsibility of parenthood, but that each and all of us may thoroughly realize that the birth of each child is the beginning of a separate existence, whose ultimate end should be the production of a healthy and efficient human being.

Harold Chapple.

VIII.

The method of Nature, of evolution, in the development and perfection of species, has always been unlimited propagation and indiscriminate slaughter.

Fred W. Wynne.

IX.

We can unhesitatingly affirm that the débâcle of women's bodies, as a result of errors and excesses in reproduction and overstrain of the essential feminine function, is the most widely spread of feminine ailments.

Hugo Sellheim.

X.

And, in the region of character formation, rather than of physical health, we may also observe that limited sexual experience goes hand in hand with a certain timidity and inadequacy.

S. Freud.

XI.

The orgasm, as an individual function, has definite and distinctive effects on all the social and intellectual activities and achievements of each individual.

Wilheim Reich.

XII.

Eyeglasses and contraceptives alike, are a portal of the spiritual world for many who, without them, would find that world largely a closed book. However in themselves unæsthetic, for those who need them, they make the æsthetic possible.

Havelock Ellis.

XIII.

The experience of orgasm and its *rôle* and interactions in social and individual life are not easy to discuss impersonally and unemotionally.

Wilhelm Reich.

XIV.

The highest experience of life, in the service of the highest aim of life : the inception of new life.

Havelock Ellis.

XV.

The Divinity, dear friend, who presides over Motherhood is—Chance.

Balzac.

XVI.

Women, ye desire to be loved with strength, with strength and long fidelity till death ? Good : then be ye mothers of your children.

Jean Paul.

XVII.

He who wishes to prevent abortions and yet forbids contraceptive appliances and knowledge, acts exactly as though he wished to combat a plague by penalising disinfection and sanitation !

Max Hirsch.

XVIII.

If any should wish to deny Nature, and forbid it to be and do as it needs must—it is even as if though he forbade fire to burn, water to moisten, mankind to eat, or drink or sleep : even so.

Martin Luther.

XIX.

Humanity is twofold, and this duality of man and woman is joined together by time and eternity, in their labour and in their children.

Heinrich Dehmel.

XX.

Thy challenging desire is fed and stilled
But mine is not fulfilled . . .
Oh thou my sun and storm cloud—I am earth,
Give me the pangs of birth,
Give me—thy child.

XXI.

There is more meaning in this body of thine than in thy wisest wisdom ;
And who shall know what use thy body makes of that wisest wisdom ?

Nietzsche.

XXII.

Humanity must deliver itself from the painful tyranny of irrational nature which balances eternally between mass-slaughter and mass-spawning.

Max von Gruber.

XXIII.

" Degeneration " is a word much in favour with professional Moralists. It includes all the many and vague—though dire—consequences which they apprehend will ensue if certain things, which offend their personal feelings, are not forbidden by law. Their apprehension has no basis in reason, and the terms " degeneration " and " degenerate " as currently used, have no

any precise biological meaning. Anyone using these terms utters an incantation which no argument can disprove or dispel: for an incantation is essentially irrational.

Svend Ranulf.

XXIV.

The reverence of man for woman is because of this: in woman's body slumbers immortality.

Karl Ludwig Schleich.

XXV.

The service of the creative powers of life is the noblest aim of humanity.

Th. V.

PART III

THE PREVENTION OF UNDESIRED CONCEPTION

CHAPTER XII

INTRODUCTORY. "CONCEPTION" AND "PREGNANCY"

"Asepsis" against Sperms

WE have now to consider the measures and methods appropriate to avoid undesired conceptions.

The use of "avoidance" or "prevention" here is clear; we wish to obviate the fertilization of ovule by spermatozoön, which leads, normally, to the condition of pregnancy or gestation.

The term "undesired" is vague in respect of *by whom* the possible pregnancy is not wished. Many persons may desire something which others dread or detest. We shall use the term *undesired* with reference to the possible parents, *i.e.*, husband and wife alone. Of course, it is often the case that other persons consider such an attitude extremely wrong; or that the deliberate avoidance of pregnancy may damage the *corporate community* or *nation* or *class*, to a degree which is not fully balanced by individual considerations. But these aspects of contraception have been fully discussed in the first part of the present book.

I would, however, urge married couples to remember that their own desires and purposes should not be the *sole* factors in their decisions as to parenthood. There is a third party; the child, to whom they may give life. Even if a pregnancy and its result should be fervently desired by both partners of the union, it must be considered "*undesired*" *and therefore*

undesirable and wrong if the probabilities are that the potential child's qualities and conditions, *especially in health, intelligence and nervous stability*, would be extremely unfavourable—or below the average. Such children should not be born, and, therefore, should not be conceived.

We shall therefore treat contraception from the *individual* standpoint. Every married couple must themselves decide, in the last resort, *whether they want a child, that is, a conception, or not;* and, if not, how they are going to prevent it. I would, however, yet again, and with all the emphasis at my command, warn married couples against *frivolous, half-hearted and superficial resolutions in this most important matter.* Married couples wishing to take *all* relevant factors into account would do well to re-read the Third Chapter of the present book, and discuss it thoroughly with one another; and, having *come to an agreement that a further pregnancy is undesirable, they should take their stand and put all further doubts and arguments behind them; they should master the facts set forth in the following pages, and apply them with all their intelligence and prudence.*

The exact definitions of both "fertilization" and "pregnancy" are more complicated than the meaning of "undesired." They appear, at first, to admit of an obvious explanation, but they are *not identical and are often confused.*

What must be understood by the initial process leading to pregnancy: by "conception"? We must have a precise definition, for the term will be constantly in use, and authorities on medicine and gynecology employ it to denote quite different things.

The dictionaries, for example, equate conception with —fertilization, or fecundation, or insemination. For instance, the Encyclopædia of *Sänger* and *von Herff*[182]—which I cite because it is generally particularly exact and careful in its definition—has on p. 147 of Part I. the following: "*Fertilization, Fecundation, Impregnation, Conception:* the process of fertilization consists in the merging of the male and female gametes or reproductive cells, into a new cell, which undergoes rapid segmentations and subdivision, and

becomes capable of producing fresh groups of cells." Again, in Part II. and p. 277 of the same book, we find " *Conception —the term used for the passage of the fertilizing seed into the female genitalia.*" *Hoehne*, in *Stoeckel's* Manual, [183] expresses himself differently: he says: " It is with the impregnation of the mature ovule, *the date of fertilization*, that a pregnancy begins: and not with the fertilizing coition or copulation, *i.e.*, on the *date of conception.*"

What exactly is the difference between conception and impregnation or fertilization? To one writer on the subject, the former term means the deposit of semen in the womanly organs: to many other writers, conception is synonymous with the penetration of the uterus by the spermatozoa; and others, yet again, use conception and fertilization interchangeably, to denote the penetration of the ovum by a spermatozoön—(we leave the complex processes of " interior " and " exterior " fertilization out of consideration for the moment). They incline to give to the term *Conception* a passive, receptive and feminine undertone, and to *Impregnation* or *Fertilization* an active and masculine undertone, as representing two different aspects of the same process and function.

I should rather say that, linguistically, " Conception " implies more than the reception of the semen in the woman's organs: for this may happen without procreative result. *I should understand by the term, rather more: namely, the reception of the male germinal element within the female germinal element: the necessary preliminary to the generation of new—and relatively permanent—life.*

The entry of the spermatozoa into vagina or uterus, however important, needs no special term, as it is not of *decisive and crucial significance, like the fusing of the gametic cells.* The penetration of the tubes by the sperms is really more important; but we have no special designation for it. We shall therefore use the terms fertilization and conception for one and the same event; the union of the spermatozoön and ovule.*

* See Chapter IV. and Appendices, especially Appendices IV., V. and VI.

Pregnancy is a term of immense practical importance. Yet, here too, there is much confusion of thought and speech.

In the practice of obstetrics, we reckon duration of pregnancy as from the first day of the last menstrual period. And we may certainly assume that on that day *the woman was not yet pregnant. She became pregnant at an unknown date in the weeks immediately following her last menstruation.* We use the last menstruation as a rough and ready means of arriving at a probable conclusion : *for we cannot know exactly when the pregnancy began ;* we only know, from certain signs, that it has already begun.

When has it begun? Hoehne, from whom we have just quoted, continues in these terms : " as a woman becomes pregnant at the moment of fertilization, we must reckon the time occupied by the transport of the fertilized ovum to its place of *implantation,* as a part of the period of gestation. If the fertilized ovum cannot implant itself in the uterine membrane, but is extruded and perishes, there is an extremely early abortion, without typical symptoms." Of course, this point of view may be well defended and justified ; but, in the same Manual, *Stoeckel* himself writes as follows, (p. 744) on *Extrauterine gestation :* " The decisive factor in *causing the pregnant state* is the capacity of the ovum for *implantation.* The ovum must have evolved to a stage of segmentation in which it is surrounded and contained in a so-called *Trophoblast*—a cellular layer which ferments and makes possible the implantation of the ovum within the maternal (uterine) tissues, *Whenever and wherever the ovum has reached this readiness for implantation, it attaches itself to the maternal tissues.* If it should, unfortunately, be outside the uterine cavity at the crucial moment—the result is extra-uterine or ectopic gestation." *

According to this authority, therefore, *pregnancy begins with implantation ;* but this implantation takes place *several days after* the fertilizing conjunction of the essential cells.†

This is an important difference of opinion between two

* Dr. Van de Velde's italics.

† *Hoehne* gives no specific number of days, but it is at least *ten*—on this, all investigators agree—and probably even a fortnight.

eminent authorities. *Stoeckel* does not consider the stage of development between fusion with the spermatozoön, and implantation or adhesion to the uterine wall, as belonging to the state of pregnancy: *Hoehne* does so consider it. In my opinion, *Hoehne's* view cannot be sustained, but that of *Stoeckel* is obviously right. If *Hoehne's* definition be exactly accepted, the first weeks of each and all pregnancies are extrauterine. This is, linguistically, inadmissible: we can only speak of extrauterine gestation, when the fertilized ovum has *adhered* outside the uterine cavity, which, generally, means in the Fallopian tube.*

This confusion of thought and terms is by no means exceptional. Several further instances might be quoted.

The point at issue is closely connected with another: is the fertilized ovum, from the very moment of fertilization, a separate and distinct living being? Has it the right to its own life—its own problematically—separate life? I use this qualifying adverb in the belief that the fertilized ovum's separate existence is questionable *until implantation in the uterine cavity*. This may involve a certain paradox, as the " independent and separate existence " begins with implantation in the maternal body on which the potential child becomes a parasite till birth!

Theologians and Jurists have occupied their leisure with dissertations on the precise moment in which the *soul* is created and added to the cell. We quote *Diekamp* (184) on Catholic dogma: " *The creation of the soul occurs at the moment of its union with the body: sententia probabilior. Aristotle* assumed that the fruit became imbued with a soul forty days after conception. *Lactantius* (' *de Opif. Dei,*' 12, 19) also believed that the soul was created forty days after conception: most scholastic authorities concurred. Thoman of Aquinas (Q. 118, a, 2, ad. 2) says that, at conception, only a *vegetative* soul is provided; with the course of natural development, a sensitive soul emerges and, at the special time stated, a special rational soul is created

* " Ectopic Pregnancy or graviditas extrauterina is the *implantation* (my italics) of a fertilized ovum, outside the uterine cavity." Encyclopædia of *Sänger* and *v. Herff* (182).

and given it by God. These views have now been almost wholly superseded by the belief that the rational human soul is created and joined to the body of the fruit, in conception."

"Almost wholly" and "*Sententia probabilior*" at least leave the path open for a revision of these pronouncements, in favour of the creation of a soul at some date later than conception. It would be of interest to ascertain whether the view—universal among specialists to-day—*that the ovum takes several days after fertilization to reach the uterine nest, physiologically prepared for it, and that these intervening days are necessary for it to pass through its first essential stages of development*—has had weight in theological circles!

We must bear in mind that many women are sterile because their ova, *after having been fertilized*, find no adequate and functional uterine membrane for *nesting*, or because they fail to attain the necessary maturity. Furthermore, the same conditions may obtain in other women as a result of temporary and special factors—*i.e., factors which are not constitutional.*

It will, therefore, be evident that from the theological point of view there is enormous importance in the possibility that all such fertilized ova, which are extruded and pass away before they can adhere to the uterus, *represent so many immortal human souls.*

From the juridical standpoint, it seems to me that the precise date on which pregnancy begins—whether with fertilization or implantation—is not without significance. I shall not, however, endeavour to formulate the problem in terms of Law. *Niedermeyer*, who specializes on the medical aspects of forensic problems, and who has treated a similar theme in his juridical thesis [185]—a work of much interest to lay readers as well—has stated—in the course of a correspondence with me on this topic—that "the date of the beginning of pregnancy can hardly have practical importance in law, so long as it is impossible to prove the exact moment of fertilization or adhesion. In theory, their interest in the matter is less than that of the medical profession." I should,

however, be specially interested to learn the views of other lawyers here. Even doctors may disagree! Biologically, we may base our views on the results of *genetic* research: if we consider "fertilization or conception to be essential—by the merging of the nuclei (or gametes) of the male and female reproductive cells into a body which has the dynamic properties of a new cell," (*Fischel* [186])—i.e., to the inheritor and transmitter of biological qualities—*then we must logically date conception from the formation of the new "Zygote."*

But this does not mean that *pregnancy begins with conception. Pregnancy concerns the mother as well as the unborn child*—and here there are complicating factors.

Of these factors, we can only *know* the date of the first: the first day of the last menstrual period. *We reckon pregnancy as from that day, if there is no menstrual period when it next falls due.* We know this is a rough and ready method, for *there was no pregnancy on the first day of the last period.* But we still use this method of "dating," because it gives a "*point d'appui,*" has the sanction of custom, and is of some—though very relative—clinical help.

For the other decisive events, we have no ascertainable dates. There are generally other possible occasions of fertilization; the date of ovulation is variable, and fertilization may have taken place either after the last normal menstruation, or shortly before the next delayed or abnormally slight menstruation—(menstruation during pregnancy). Therefore, we cannot make any definite statements on the degree of development (of the zygote) at the end of *the so-called first month of gestation,* i.e., *twenty-eight days after the beginning of the last menstrual period.* As a rule, we may suppose implantation to have quite recently occurred. Perhaps the development of the zygote, four weeks after the first day of the last menstrual period, corresponds to the condition of the embryo in the so-called *case of Peters* (where the last period occurred a month before the woman's suicide) and in *the case of Jung* (where the last period had occurred four weeks previously, in a normal manner). These embryos had nuclei of about 0·25 mm. in length,

and contained in an outer cortex corresponding to the Amnion.*

We must not confuse the embryo at the end of the first four weeks of pregnancy with the " embryo at four weeks " described above. (See *Hoehne, loc. cit.*, p. 75.)

Certainly scientific considerations do not solve these difficulties. Relative values are under consideration, rather than absolute—our whole philosophy of life and standard of values, that is, our emotions and ideals, must decide our views, rather than our exact knowledge.

I can only speak here, not as a doctor, but as a human being. To me, a pregnancy begins with implantation or nidation of the ovum in the uterus.

Only through such implantation does the fertilized ovum become capable of its distinctive future development ; only then is its initial stage visible—though the earliest embryos are only $\frac{1}{4}$ mm. in length—and only then is the ovum more than a drifting complex of cells,† wafted along the oviduct, apart from the maternal body. Moreover, for the greater portion of this intermediate period—between fertilization and implantation—this cell cluster is no larger in dimensions than the original mother cell. The feeling that pregnancy starts with implantation is generally in harmony with that of every mother, actual or expectant. Let doubters test this by asking a woman *from what moment she considers herself to be pregnant.* The presence of motile spermatozoä, or of an extruded unfertilized ovum within the recesses of her organs, is not decisive for her.‡ Her answer is almost

* In dealing with an analogous subject, *Niedermeyer* has expressed himself admirably, as follows : " For those investigators who study the *profounder aspects* of life, all questions become of secondary importance, compared to the *essential nature* of what they study. The trend of thought leads inevitably from *juridical* complexes to social and biological and, finally, to philosophical bases. And here the human intellect must stop in its courses and accept the fact that ' pure reason ' has no answer to the fundamental problems of life and the world." The same is as true of medical as of juridical matters.

† I do not deny that this complex of cells is immensely important, because of its heredity from the past and potentialities for the future, but the same is equally true of every unfertilized ovum,—and of every spermatozoön, as well.

‡ Of course, it is quite true that she may rejoice to feel that her body contains the life seeds of a man whom she loves dearly. This is however, a different matter ; it is an aspect of her feeling for her mate, not for their child.

invariably as follows: "I consider myself pregnant from the moment that the fruit has taken root—or *adhered.*" I have heard this reply so often that I consider it typical.

It is not possible precisely to define a point of view on relative rather than absolute concepts—a view, which deals with processes taking some time to complete, and which is determined finally by emotion rather than by knowledge—without very great simplification in statement.

But such simplification and summarizing are unavoidable, in order to set forth the factors involved with the greatest possible clearness, as they also decide conduct in certain emergencies.

The opinion detailed above may be formulated thus: *Fertilizaton initiates the possibility—the cellular basis—of a new individual life. The fertilized ovum has* INDIVIDUALITY *in the biological and genetic sense. Its existence as a rudimentary human being begins with implantation, or nidation, which is simultaneous with the beginning of embryonic evolution and changes within the ovum itself.*

Pregnancy begins with implantation. The time elapsing between fertilization or conception and implantation, may be considered a preparatory or transitional stage, in which the essential conditions for the possibility of pregnancy are brought about.

It would probably correspond more closely to facts, were the pregnancy reckoned as from the date on which MENSTRUATION DOES NOT OCCUR *(though due) rather than from the first day of the last normal period. But there are no overwhelming reasons for discarding the customary assumptions.*

It is possible to prevent undesired pregnancy (*a*) by removing or treating the organs of reproduction in either partner, so that the essential cells are not formed, (*b*) by preventing the adhesion or implantation of an already fertilized ovum, or (*c*) by preventing the union of ovum and spermatozoön. The third method is the most widely practised, and is, strictly speaking, contraceptive.

If we intend to prevent this merging of the essential cells—

which generally takes place in one of the bilateral Fallopian Tubes—we have a choice of *biological strategy*.

We may either: (1) prevent the invasion of the vagina by the sperms, (2) prevent the sperms—having already entered the vagina—from reaching the uterine cavity, (3) by means of operative surgery, close the narrower apertures of the tubes in the uterine cavity, or occlude the tubes further upwards, (4) or we may prevent the passage of the ovum into the Tube, by closing the abdominal (or wider) extremity of the oviduct, (5) or, by so closing (encapsulating) the ovaries, that the ova normally extruded do not reach the abdominal cavity and the mouth of the tubes.

We shall treat these anatomical, chemical, mechanical and surgical methods in detail in the next chapters, and realize how numerous and diverse are their modifications and variations. We cannot, however, attempt an *exhaustive* treatment of all these, but we shall confine ourselves to what is most important, whether in principle or practice.

And, before enumerating these, there is something to be said on the right and adequate use of the current preventive methods, *i.e.*, of those based on the first and second of our five categories.

Here, too, knowledge and thought have a good deal to do with success in the method chosen. And here, too, we frequently learn that natural processes are less easily evaded or truncated than most persons believe!

Few doctors, in modern days, have not been repeatedly asked for advice by married couples as to what or which "special method" they must "use" in order to prevent the occurrence of pregnancy, as a result of marital intercourse, with *absolute certainty*, in a simple and easy manner, and without disturbing or destroying natural reactions. This request is made to us every day, by letter and in personal consultation; so we must really believe it is meant seriously. We must realize that (often educated) people believe that the doctor is in a position to solve all these difficulties for them by a piece of verbal advice; and that, when he says

he *cannot* do so, he is protecting a special " secret " ; a privilege of his profession.

The " How is it that most doctors have very small families ? " is the incredulous retort to the doctor's honest answer, that there is *no simultaneously, absolutely certain and practically simple and hygienically harmless and erotically delightful contraceptive.*

The answer to this question is, however, of immense practical relevance. Doctors succeed as a rule in the application of contraception in their individual lives, because *they understand the main factors with which they are dealing,* even if they are not *au courant* with all the latest investigations and inventions of " birth control." They understand that a few—very few—out of hundreds of thousands of sperms, shed at the vaginal orifice, may be enough to cause pregnancy : even though, *other things being equal, the deeper the penetration in coitus, the likelier the impregnation.* The doctor experiences daily the contrariety of things : he knows that this or that result—which is seldom achieved when desired—often occurs when it is least welcome. *Therefore, he has the habit of vigilance.* And his constant endeavour to keep micro-organisms of a pathogenic type from wounds, sores and other weak points, where they would cause grave injury or death, makes him realize the insidious nature of *all* micro-organisms—invisible yet potent. Asepsis and antisepsis *have become interwoven with his very blood and brains, and, therefore, he applies their basic principles against the seeds of life as well as of death.*

Asepsis implies the banishment of all germs of putrefaction or disease from wounds—already inflicted, or to be inflicted, as in surgery—by the cleansing and sterilizing of hands, instruments, bandages, and anything that can come in contact with their raw surfaces. Antisepsis means the neutralization or destruction of those germs of putrefaction or disease which have not been warded off, by means of chemical solutions applied to the lesion.

Antisepsis involves the risk of injury to the tissues, by the chemicals strong enough to act as germicides. Therefore, asepsis is generally preferable ; and we must exercise discretion

in using all preparations which will probably kill sperms (or germs) but certainly injure human tissues. Often a spermaticide, or germicide, must be combined, in practice, with a substance protecting the tissues from its own extreme effects.*

And the application of these truths? In contraception, we can use antiseptic or aseptic (*or aspermatic and antispermatic*) substances. The antispermatics are used widely and frequently, but not always with success. It is in *asepsis* against spermatozoä that the doctor has the better results: this is the reason—or the main reason—why he practises contraception with more success than the layman. *It is not sufficient to take heed in coitus itself.* If, before and after connection, the peril of the invading sperms is disregarded; if aseptic (or aspermatic) thought and action do not consistently prevail, the best contraceptive methods may fail and, sooner or later, a pregnancy will result.

Let us give typical examples. A man has *coitus condomatus* with his wife; that is, he performs the sexual act wearing a thin, specially prepared rubber covering (a condom †) over his organ. All is well—but, after ejaculation, he again inserts his member into the vagina for a few moments, after removing the condom, though without having a second emission. A very natural caress. But, if he has omitted to cleanse his member thoroughly from traces of semen, and to urinate vigorously, thus clearing the urethra as well,‡ both he and the woman he loves, and desires

* There have been tragic cases in which the use of *corrosive sublimate* as a spermaticide has led to the death of the woman who used it thus.

† Otherwise "Envelope" or "French letter."

‡ I should not venture to claim that even vigorous urination is absolutely a guarantee that all lurking sperms have been destroyed. A few "stragglers" may be ensconced in the ducts of the tiny glands opening into the urethra, and thus escape the acid flush of urine (for urine is strongly acid and to sperms, acid reactions are fatal). Then, if there is renewed sexual excitement, the glands of the male genitalia exude the clear slippery mucus of "lubrication" (or "destillatio"); this mucus may envelop and transport the sperms, and thus an *immissio penis*, without ejaculation, following the most contraceptive coitus, may introduce the invaders into the vagina, or the fornix itself.

There is a further dangerous possibility. The ejaculatory mechanism may be defective. Before the reflex procession of orgasm can begin, a few drops of spermatic fluid may leak through the *vasa deferentia* into the urethra. This would explain the otherwise paradoxical circumstance that various investigators have found spermatozoä in their microscopic examination of the "destillatory" mucus, exuded before ejaculation.

to protect, may have a terrible surprise. Another man or a woman—may touch the vulva with fingers on which semen has hardly dried with a sponge containing drops of semen, or with linen which has been moistened with semen! Micro-organisms, be they germs or sperms, seeds of death or of life, are no respectors of persons, nor amenable to "good *intentions*" alone. As for the cruel and stupid lie—in which the wish is father to the thought—that "only once is never"—it needs no refutation to those who will *think* for a moment.

It is undoubtedly the case that many failures and tragedies, debited to contraception in general, are the result of *inadequate aseptic precautions against sperms*. The "secret" of success here is—extreme care, precision and vigilance in executing whatever method has been chosen, and due allowance for *apparently* trivial matters, which implies avoidance of contacts which may make all previous precautions vain.

Such precision, vigilance and avoidance must be based on *knowledge. And knowledge means taking trouble to master theory as well as technique.*

CHAPTER XIII

THWARTING THE CONCEPTION BY SPECIAL TECHNIQUE OF SEXUAL INTERCOURSE

IT may seem inconsistent to consider, first of all, the abstention from actual communion. For this must appear a contradiction in terms, both in its narrower sense of coitus, and in its wider significance for marital love and life together. But practical experience teaches that abstention from coitus between married couples who are in love with one another, body and soul, and who remain faithful to their marriage covenant, is not, by any means, generally abstention from all acts and endearments of a sexual character. On the contrary! These endearments may become so fervently intimate that they culminate in orgasm of one or both partners. And this explains the possibility that pregnancy may result, even when the sexual act is avoided. I know of at least two cases in which I am absolutely convinced that there was no coitus—yet there was conception! We have discussed possible explanations in the preceding chapter.

As to sexual intimacies without coitus, I am inclined to think that mutual masturbation, or similar contacts, are, generally, quite without harmful consequences, for the special risk of masturbation is the risk of a solitary habit; its too frequent and immoderate enjoyment. This risk is "cancelled out" as between married people by their joint close life together; or, if still existent, is no greater than that of "normal" sexual excess.

In many cases in which coitus is medically inadvisable, but any and every form of sexual excitement is not necessarily contra-indicated, I think these mutual manual caresses and gratifications are indubitably much better for both partners than complete abstinence in joint life together.

I fully admit that abstinence in marriage may sometimes

be a moral duty; it may even be not only harmless, but helpful in some cases, if not exercised for too long. But we can never lay down the law absolutely, and say "so long" can do no harm! It depends on the bodily and mental constitution of each individual partner, and on their mutual relationship. A husband and wife who observe each other understandingly soon know the limits of their own, and their mate's power to forego and transmute desire! I have repeatedly urged that long periods of abstinence between married couples should be avoided, for they are destructive to the well-being of the individuals and to their mutual relationship.

This *alienating* effect of prolonged abstinence is painfully felt by persons who realize the need for family limitation, but whose principles forbid the use of contraceptives. Recently I was consulted by a Protestant clergyman on the reliability of the "safe period." He expressed himself in these terms: "We had originally intended to abstain from union for a whole year. But we have had to realize that our harmony and sympathy of mind and soul, which has hitherto been complete, will be impaired and perhaps destroyed by such a course of action."

I entirely concur in this view and would, therefore, urge that abstinence from coitus, as a means of preventing children, can only be indicated for limited periods of time.*

The case for the "safe period" is not much stronger. There is no doubt that certain periods of the monthly cycle are more favourable for fertilization than others; there are even probably, *certain days of the month in which some women are hardly likely to conceive; but it is not possible to formulate a general rule which is, in any way, valid or dependable.* Certain couples, by special consideration and attention, *may* succeed in discovering (and profiting by) a reliable "safe period" in the particular individual woman.† And

* Again I stress the fact that we are speaking of abstinence between husband and wife, and in cases where the health of both partners is normal. All other aspects of sexual abstinence are outside the scope of this study.

† But this can obviously only be by the method of "trial and error!" —(Tr.'s Note.)

if there is such a "safe period," it will *most likely* be in the days just before the onset of menstruation. But even in the cases in which *certain days* have been proved "safe," there is always the *possibility* that ovulation has been deferred or premature, or that there have been other changes—temporary or permanent—in the ability to conceive. Moreover, there may also be changes in the masculine organism, increasing the vigour and vitality of the sperm cells, and either modifying or neutralizing any "safe period."

The German specialist, *Siegel*[187] made investigations in the case of 100 women who became pregnant during their husband's leave of a few days from the Front. He declared that conception could not happen during the last week of the cycle. This has been proved to be incorrect. Medical men desiring further data on this may be referred not only to *Siegel's* book, which appeared in 1917, but to a study by *Robert Latou Dickinson*[188] which contains illustrative material, and numerous graphs and curves.*

The liability of women to conceive on any day in the month is due to such factors as, premature ovulation, which may be stimulated by coitus,† belated ovulation, or the possible slow extrusion of the ovum, which remains longer than is normal in the follicle, and, finally, the long period during which the ovum is capable of fertilization, and during which the sperms are active and motile within the woman's genital tract.

Whatever may be the interplay of these elements, one thing is certain: the undependability and uncertainty of any "safe period."‡ Moreover, two important psychological objections must be given due weight. The continued anxiety that this inappropriate method may fail—an anxiety that may lead to mutual alienation and individual

* See also, Appendix I. to this chapter, including a comment on a study by *Knaus* which appeared in 1929, when this book was in proof.

† A possibility which is probably the reason for *Siegel's* view that the maximum likelihood of fertilization is from *six* to *thirteen* days after the onset of menstruation.

‡ Thus menstrual coitus may lead to fertilization; cases are definitely recorded although it is generally and *erroneously* believed that this is impossible.

neuroses—and " the incompatibility of constant arithmetical calculations and rigid adherence thereto, with the spontaneous impulses of intimate companionship based on mutual love " in the words of *Wichern*.[189]

We pass now to *prolonged lactation* as a contraceptive.

In general, we may say that while women are suckling their babies, they are less likely to conceive than at other times. Further, it is known that when children are suckled for longer than nine months, and in any case for longer than their first year after birth, the womb shrinks and becomes flaccid, ovulation and menstruation cease, either permanently or for some time—and sterility results. But it is at least equally certain that a considerable percentage of nursing mothers begin to menstruate again before their babies are weaned. *Indeed, a fresh impregnation only too often occurs during lactation, and before the reappearance of the warning signal of renewed ovarian activity. There is always this possibility so long as protracted suckling has not led to genital atrophy ;* and such genital atrophy, which may be permanent, is too high a price for both partners to pay for effective contraception.

We may sum up thus : during normal lactation, there is a *likelihood* of no resultant pregnancy. But it is impossible to rely on lactation alone, when it is *necessary* that a fresh conception should not take place. As soon as menstruation* has set in once more, all *likelihood* of immunity is over. And, finally, all protracted lactation is inadvisable, because of other and aforesaid degenerative and destructive results.

We must warn against a recommendation made by *Buttenstedt*[190] and based on total misunderstanding of physiological facts. He suggests that, while the partners wish to prevent pregnancy, the man should apply the remedy by—frequently sucking the woman's breasts. Anyone with any knowledge of the organs and processes involved must

* " Menstruation " here includes menstrual symptoms, such as slightly discoloured discharges together with the peculiar, disagreeable or painful *general* symptoms of menstruation, especially if they recur at intervals of four weeks.

at once recognize the futility of such an expedient, and the equally great dangers to such delicate organs (as the nipples and mammary glands) of acute and continuous congestion—without the functional flow of milk.

Having dismissed indirect and inadequate expedients, let us turn to contraceptive technique based on the facts of genital anatomy and physiology.

First we must dispose of the so-called " Karezza," which consists of penile insertion without rhythmic friction or culmination. It has been stated that the phallos sometimes remains for over an hour within the vagina, but it is more often a matter of minutes. Ejaculation is inhibited by mental concentration by both partners on the spiritual aspects of love and their union. The process concludes as the male organ becomes flaccid and resumes its normal state ; or by withdrawal on the man's part, as he finds that he cannot continue without the natural *finale.*

J. H. Noyes,[191] the medical man and leader of the Oneida Community in Oneida County of New York State, considered himself the inventor of this method, and gave 1876 as the date of its " discovery."

" Karezza," as an *habitual method* of coition, must be clearly distinguished from its use on isolated or special occasions. I have explained the serious objections to its use as a habitual method, in my study of " Ideal Marriage," * with such emphasis that there is no need to repeat them here. I have no doubt that the *systematic employment* of Karezza brings imminent risk of sexual neuroses to all normal men and women. And, as to its reliability—*Marie Stopes* [192] found three " accidents " in the comparatively small number of cases reported to her, and *Cooper* [193] definitely urges that persons who persist in using Karezza should do so in combination with a chemical preventive—at least at first, until they have mastered it completely—" because of the possibility of seminal leakage."

Nevertheless, " Karezza," either under its original name, or other designations, still finds fervent advocates, especially

* Pp. 202–204, *op. cit.*

among members of religious or ethical sects.* Further particulars are given in a German amplification of *Alice Stockham's* work, which appeared in 1895, and is now out of print.[195] I can only repeat that the method is inappropriate for and between normal persons. And it is obvious that most persons, and especially most men, would not consent to try it.

I have also dealt at length with coitus interruptus in my previous volume,† and need therefore only summarize my emphatic warning against its regular and habitual use.

By the term *Coitus Interruptus*, we understood the method of Onan, *i.e.*, male withdrawal from the vagina immediately before the culmination of sensation, so that the seminal discharge takes place outside the woman's body.

On one point, gynecologists, sexologists (by which term I understand specialists in the sexual disorders and diseases of men) and neurologists are quite unanimous. They agree that—even though there is no clearly unmistakable damage after the use of Coitus Interruptus in many *isolated* cases—it brings grave danger and damage when applied systematically and as a habit.

Similarly, its habitual use cannot be otherwise than unfavourable to harmony and happiness as between the partners, even though they are not themselves conscious of this effect. And, as a final and practical disadvantage, " failures " occur quite often, whether because the deliberate action of " withdrawal " takes place too late, or the reflex action of discharge too soon, or because of negligence in removing all traces of spermatic fluid, as has been pointed out in our previous chapter.

The reason for the frequent employment of Coitus Inter-

* As, for instance, among the adherents of *Mazdaznan*, who term it " Mazdaznan Coitus." To judge from the number of recent inquiries which I have received, this propaganda must be vigorous at the present time. It is constantly adduced, as a point in favour of Karezza, that it enables a lasting magnetic interchange and confluence to take place between the two polarities of male and female. This appears to me pure fantasy. The advocates of Coitus Interruptus have always invoked " Magnetism." *Cf. Margaret Sanger's* Pamphlet. (194)

† *Op. cit.*, pp. 186–189 and 190–192.

ruptus, both in the past and the present, may be sought in—*ignorance:* and twofold ignorance at that. First, ignorance of possible alternatives, and secondly, of probable evil consequences.* Also to the curious but undeniable human tendency to regard a *definite action*, such as the insertion of a chemical or mechanical preventive, as much more displeasing to "Nature," "God," or whatever phrase may express their unconscious inhibitions, than the *omission to act*, e.g., the omission of the normal vaginal ejaculation. We must also credit human inertia or simple *laziness* with some share of this preference. To use an active contraceptive *does* require some mental effort, some manual effort and some capacity for decision.

A final and very significant reason for the wide prevalence of Coitus Interruptus has been in the past, and often still is, the dominance and ascendancy of man; a social and economic ascendancy, powerfully re-enforced by his dynamic rôle in actual intercourse. Unchecked masculine egotism took, and still takes, no heed of the equal need of women for full sexual satisfaction. If a man is very primitive and indiscriminative in sexual matters, and regards them merely as providing physical relief, *i.e.*, as a form of evacuation, then he does get such limited and low grade relief in Coitus Interruptus, independent of his partner's sensations.

There are, however, profound and significant changes here, which have often been brought to my notice within the last few years.

This undoubted current of change in intimate sexual matters may be attributed to various causes: to the development of feminism and conscious demands by women, or—as I should prefer to ascribe it, perhaps really because I have attempted to bring some understanding and consideration of feminine needs and rights into the code of men—to a realization of the extreme injustice and damage which have been inflicted on women in the past, by treating them as "passive implements, receptacles and incubators." †

Whatever may be the causes of the changed consideration

* See Appendices II. and III. to the present chapter.
† "Ideal Marriage," p. 195.

and attention to the woman's erotic fulfilment, it seems to me incontestable that—at least among the intellectual and professional classes in Central Europe—there is a determined effort to modify *Coitus Interruptus*, so as to secure a certain satisfaction for the wife. Medical men who have both suggested and approved these methods in their professional capacity, and practised them privately as husbands, have given me such frequent and explicit information that I have no doubts of its accuracy.

The modern type of coitus interruptus is a *Coitus Prolongatus, in which insertion and close contact last as long as possible, until the male withdrawal, as in the traditional form.* The intention—and the result, in cases where the husband is not too rapidly excited and the wife not too slow and tepid in temperament—is that the woman experiences the orgasm, whether as a result of phallic motion, or of simultaneous digital caresses. Many husbands—radiant with pride—have declared that they can give the acme of pleasure to their wives, several times, on each occasion. The husband himself, however, if he wishes to avoid "accidents," must keep absolutely vigilant and detached. I have been told of men who *made a practice* of counting up to 100, doing sums in arithmetic, remembering or repeating poetry, etc.! But—as one colleague of mine admitted, after expressing the utmost satisfaction and approval of these really remarkable achievements—"Of course, one never *escapes cardiac symptoms in the long run!*" *

Gynecologically, I must applaud the natural and necessary sexual satisfaction which these modern methods give to women, so much more fully than traditional coitus interruptus. Ethically, I must applaud the victory of altruism and tenderness over instinctive masculine egotism, and, as an author, I am proud to feel that I have helped a little to modify and enlighten that egotism. But, as a doctor and as a man, I cannot approve an arrangement as one sided as the coitus interruptus of the past; an arrangement which overstrains and undermines both the central nervous system

* It must be added that many men are constitutionally incapable of prolonged coitus.

and the virility of the chivalrous husbands who practise it.*

This modern modification of an ancient practice *may, on occasions,* afford welcome relief to both partners. *As a habit,* it is quite as undesirable and injurious to mutual happiness as the "Onanistic" practice, which afforded comparative relief to the man alone.†

We now pass to the methods of sexual intercourse in which ejaculation takes place, as and where nature intended, but in which there is, nevertheless, the intention to avoid pregnancy, and adaptation of means to that purpose.‡ We shall here leave all contraceptive appliances out of account. But position and action in coitus may influence impregnation favourably or unfavourably, although sperm cells discharged within the vagina may easily enter the uterus by their own inherent activity. The two factors which help or hinder that activity are :—

(*a*) Occurrence or suppression of the feminine orgasm ; and

(*b*) The exact place at which ejaculation occurs ; that is, whether the sperm cells are projected at or into the *ostium uteri,* or not.

Conception may be made less probable if the woman does not experience orgasm or if the man's orgasm does not take place at the moment of maximum penetration.

Certain strata of our population and certain races and nations—who may be ignorant of the theory of this process, but have considerable empirical knowledge—are well aware that a woman who wishes on no account to become pregnant, would do well to avoid orgasm. And this is, accordingly, suppressed by many women, who do not wish to conceive by some particular man to whom, nevertheless, they grant

* See Appendix IV. to this chapter.

† See also "Ideal Marriage," Chapters IX. and X.

‡ I would suggest that contraceptive coitus be classified as follows:
(*a*) Functional, as treated in the following pages.
(*b*) Mechanical, (*c*) Chemical } as treated in Chapter XIV.
(C.'s Note.)

sexual favours. This ancient knowledge, and still existent custom, prove the connection between orgasm and impregnation. There are women who boast that they are *able to conceive, or not, at will,* according to whether they permit themselves to cross that dizzy threshold at the summit of consciousness or not. And there is no reason to suppose that they are not telling the truth.

These women are, however, exceptions. In general, reliance on the voluntary suppression or evasion of orgasm in women is far too risky to be considered or suggested seriously. And it is also undesirable. Except in cases of women who are so temperamentally placid, or absolutely frigid, that they have greater difficulty in achieving orgasm than in remaining passive—the deliberate avoidance or suppression of supreme sensation must be harmful, mentally and physically, and we need not enlarge on the effects of the wife's refusal to share her husband's ecstasy, on the general marital relationship.

Attempts to control the exact *region* of ejaculation seem to me, in practice, more likely to achieve what is desired. Of course, conception is not absolutely impossible, but it is much less likely, if ejaculation does not take place at the moment of profound penetration, especially if and when the method is supported by such " second lines of defence " as the previous insertion of a reliable spermaticide, or the prompt post-coital douche.

Of course, there remain certain grave disadvantages. Not only is there the inevitable loss of complete *abandon* and spontaneity, but the woman is deprived of the exquisite soothing, yet tonic, seminal libation of the *portio vaginalis ;* a vital tribute which is extremely favourable to her orgasm, although not indispensable. The main difficulties are, however, concentrated on the male partner : for a profound desire to penetrate and invade as deeply as possible is intrinsic in the male, since from the biological and teleological aspect this fierce invasiveness is, of course, highly favourable to impregnation. Psycho-analysts associate it with the return to the mother's womb (*Ferenezi*[196]). But, whatever

may be its precise organic or psychic source, there can be no doubt of its existence, nor of its intense crescendo during the seconds immediately before the release of the orgasm: while, at the same time, the higher nerve centres become dim and dizzy, consciousness and volition are submerged by that elemental uprush (*Reich*[197]). It may be imagined that self-mastery and discretion * *i.e.*, a partial withdrawal, permitting ejaculation to take place in the lower portion of the vagina—are almost as difficult and nerve racking as Coitus Interruptus, and sometimes more so! And the habitual repetition of such a *dislocation* of the sexual function —which makes such huge demands on the whole nervous system, both peripheral and central—must, of course, have deplorable effects.

We will therefore assume that both partners desire to avoid the immediate invasion of the cervical canal by the sperms. It will be both psychologically and anatomically advisable for emission to take place in that extremity of the vagina most distant from cervix and *portio*. This means, of course, that full-length insertion is avoided by the very attitude adopted, and is not dependent on convulsive concentration of mind and will-power under the least appropriate circumstances.

Let us refer to Plate X., which gives a vertical section of the uterus and vagina. If we suppose that the male organ has been drawn back to about midway in the vagina, so that the *glans penis* with the urethral orifice is approximately at the level of No. 13 in the diagram; *if the directions or* DECLINATIONS *of the intromittent phallus and the receptive vagina correspond, then the ejaculate will be directly aimed at the* OS UTERI; *and the directions do so correspond, in the* "NORMAL" *attitude of coitus, in which the man's body is superposed, and the woman lies on her back with her thighs apart and her knees slightly bent.*

Of course, in cases of unusually lengthy and slack vaginæ, the upper walls of the passage may droop together and partially shield the *os uteri* from the liquid projectile,

* The French call this incomplete withdrawal "la méthode de la belle discretion": a term applied also to Coitus Interruptus.

which will also slightly lose its force over any greater distance. Nevertheless, it is extremely probable that the *emissio seminalis* will take place directly at or into the *os uteri*.

But there is far less risk, if the phallus is introduced to the same extent, but at an angle which does not correspond with the vaginal axis.

On Plate XI., Figs. 1 and 2, the two relevant methods have been indicated. The first figure shows the outline of the phallos inserted from in front, and Fig. 2 shows its insertion from behind.

I would refer readers to the Table of Synousiological Positions and Attitudes on pp. 238–241 of " Ideal Marriage," and to the whole of Chapter XI. (pp. 211–243) of that book, which may be regarded as indispensable to the full study of the present work, and should be mastered and collated with what we have to say here on the various positions and attitudes in coitus.

In the aforesaid Table and Chapter XI. of " Ideal Marriage," I have repeatedly mentioned that *superficial* insertion or penetration lessens the likelihood of conception. But it is not wise to rely on such superficial insertion *alone* in cases where it is particularly urgent to avoid pregnancy. For, so long as the general *angles* of the two organs correspond, there remains a great probability that the seminal jet will touch and enter the *os uteri*. Moreover, the concentration of attention and will power on this possibility is very disturbing to natural reactions, and, in the long run, damaging to both general and genital health.

There is also the need vigilantly to control the elemental instinctive desire of *both partners, man and woman, respectively to exercise and to receive the utmost possible penetration :* to control and thwart this desire appreciably lessens sexual pleasure on both sides.

But if the man inserts at an angle which is not in line with the axis of the vagina—then this mighty *urge of invasion* may be gratified much more completely, and yet without exposing cervix and *os uteri* to the full seminal impact. For the *glans penis* of the male organ will be in contact with a

part of the vagina, near the actual *introitus* or vulva, whether anterior or posterior.

But one precaution must be borne in mind and observed. In cases of such divergent angles, any specially vehement *thrusting* movement of the phallus, and whether in the forward or backward direction, must be avoided; and this particular method or modification should not be used when the vagina is more congested or more susceptible than usual.

This means that the method is to be avoided on the first few occasions when coitus is resumed after childbirth or miscarriage. Such a coital adjustment for the purpose of avoiding pregnancy will hardly come into consideration during its later months, or after the menopause has become established! But we may mention, and with emphasis, that both advanced gestation and the climacteric are *contra-indications to any penile insertion in an unusual direction or angle*, as the tissues are either somewhat vascular or inclined to be brittle. Any morbid conditions of the woman's organs are also contra-indications; and it is as well to restrict oneself to the normal attitude and quite "superficial" contact while they obtain. And in cases of infantile or abnormal structure of the vagina, *any variations of angle* should be carefully avoided and would, indeed, hardly be possible in cases of pronounced divergence from the normal. Obviously, then, both partners should be fully aware of their own and each other's individual structure and special state of health: for instance, any unusually large development of the male organ must be carefully taken into account. This is not only absolutely necessary in "superficial" or "divergent" contacts in coitus, but is also necessary to an equal degree in other variations and modifications, whether *a tergo* or converse. *It is always risky for a man of unusually powerful phallic development to exercise vehement force in coitus, even when the angles of the organs correspond: it is equally risky when there is abnormally small vaginal diameter, matched with an average phallus.* Even when the organs are, on the whole, both average in dimensions, and proportionate to one another, a certain

vehement recklessness of the male movements at the moments of supreme excitement can be disastrous, for the uterus may be forced downwards and forwards by the intense contractile spasms of the woman, and the whole vagina so convulsively compressed that the phallus becomes a fatal weapon. It must be admitted that this violent *lunging*, these savage thrusts are generally the fault of the man; but women of intensely ardent nature occasionally jerk their whole pelvis forwards and towards their mate so vehemently that the vagina is simply *torn through or ruptured*. Of course, this hideously painful and distressing accident is obviously very rare, both actually and comparatively, as we shall realize if we bear in mind the number of sexual acts which occur on every day and night of any week, and the violence and ignorance often displayed during those acts; and also when we remember that vaginal ruptures require immediate medical treatment and have, therefore, almost invariably been recorded in hospital registers, case books, and medical publications. Vaginal ruptures nearly always occur in the posterior fornix, which is the weakest section of the vagina, not only because of its precise structure, but also because there is no supporting connective tissue behind it (see Plate II. in "Ideal Marriage" and Plate I. in the present book).

To sum up: unrestrained violence in coital movement is never advisable; *and in other postures than the so-called "normal" or medial attitude, it should never take place.* Ruptures of the vaginal and fornix may occur in the normal attitude, but many more have been recorded as occurring during coitus "con varioziane." In "Ideal Marriage," when analysing the respective merits and defects of attitude III. (pronounced flexion) and attitude IV. (equitation) of the Converse position,* I stressed the need for care. *Of course, vaginal ruptures, in normal genitalia only occur in cases of gross negligence or positively brutal violence, for extreme pressure or strain in the posterior fornix especially is at once felt by the woman as acute pain.* But it is necessary to repeat this warning, for experience teaches that sexual

* "Ideal Marriage," Chapter XI., pp. 218–225.

excitement often obliterates all other considerations, whether of pity or of safety. *It must be remembered that undue violence in coital movement should be avoided equally* (a) *in attitudes other than the medial or "normal," and* (b) *in attitudes where the angles of phallus and vagina diverge.* This repetition may seem tedious, but it is an imperative professional duty.

It follows that the marriage partners should know accurately the proportions and conditions of their own and each other's organs; particularly the woman should be medically examined, both before marriage and after each confinement. And if the man has reason to believe himself of more than average genital development, he should consult the physician entrusted with the examination of the affianced bride, in order to learn whether special care is necessary.

As for the medical profession, there is no doubt whatever, at least in my opinion, that both in examination and subsequent consultations, they will, in future, have to give much more attention to sexual functions, *per se* and *apart from reproduction*, than they have done in the past.

Bearing in mind the need for special caution and consideration in attitudes varying from the customary *medial* posture, we will pass in review the positions and attitudes enumerated and analysed in Chapter XI. of "Ideal Marriage," in order to ascertain the most fitted for the prevention of conception.*

In considering the converse, or face-to-face position, in its various modifications, we must bear in mind the crucial requisite that *the male organ must be pressed as far downwards (from the abdominal wall of the man standing upright on his feet) as is possible: and this result is produced by pressure against the lower edge of the woman's pubic bone.*

* In order to elucidate the differences between *position* and *attitude*, we may quote from "Ideal Marriage," Chapter XI., pp. 212–213: "There are two possible positions in coitus: the first, namely, that in which the man and woman meet face to face, or converse position (or anterior, from the woman's position); and the second, in which the man faces forwards, but the woman turns her back, the averse position, posterior, or *coitus a tergo*. And in each of these two main positions various attitudes are possible, and many are practicable and successful from our point of view."

I. In the habitual or medial attitude,* the desired pubic pressure is applied—after the *glans penis* has been slipped into the orifice of the vulva—through a change of posture by the man. His whole body should be pushed upwards towards his wife's head and shoulders ; and it will be impossible to do this while retaining the contact of thorax, breast and abdomen, " each on each." The man must push or propel himself upwards, which he can do by means of his knees and elbows, while the woman remains passive and lies still, with outstretched legs. By closing her thighs, she can diminish the possibility that the phallus may slip out of its encircling sheath, and, by muscular pressure, she can both retain the stimulation of contact and keep the phallus in its right place, preventing it from penetrating too far in a sudden involuntary movement.

A further important detail comes into play here, both in attitude I. and all others which are appropriate for contraception. It demands, however, both mastery of intimate physiological knowledge, and mastery of their own bodily and psychic nature, from both partners. In these happy circumstances there is no danger † in the fullest possible penetration of the male organ *during the first phase of communion, in which the mind is fully conscious and able to control and choose the summation of excitement.* Thus, psychologically, *invasiveness and receptiveness* are both gratified ; *but,* and it is a most important reservation, *the phallus must be partly drawn back and aimed at a divergent angle before the first fully conscious phase* ‡ *of communion soars and merges into the second culminating phase ; before*

* *Cf.* " Ideal Marriage," pp. 213, 214.

† In the terms " No Danger," we exclude the possibility of involuntary seminal leakage, however minute. Such prematurely escaping sperms are, of course, not propelled straight into the *os,* nor are they *sucked in,* and, therefore, cannot be much more risky than the bulk of the ejaculate, which is deposited in the lower section of the vagina. Nevertheless, it is more likely that impregnation will be prevented if there is a second line of defence, in the form of a chemical jelly or a *correctly and promptly administered* douche.

‡ These different phases or stages of coitus and their significance have been analysed psychologically by *W. Reich,* on pp. 22–26 of his book, cited in the list of references under No. 197. It is necessary to distinguish these phases, and I have therefore quoted the passages *in italics* from *Reich's* book.

consciousness becomes blurred and involuntary muscular contractions begin. Therefore, it is essential that both partners understand what they want to do, and do it in time.

II. The second attitude* of the Converse position is that of (female) *extension* or *Supination*, well known to obstetricians in its extreme form as "*Walcher's Suspension.*" As regards the main point under discussion, the same is true of extension as of the habitual attitude. The exact place of the pillow or bolster, which emphasizes the woman's pelvic angle, is important. It must be neither too high up towards the shoulders, nor yet too low, *i.e.*, between sacrum and coccyx. It must increase the inward curve of the waist, the "lordosis" or "saddleback," which is so pronounced in certain races and individuals. The woman's legs must not be in the least raised or bent, but must, as it were, *draw down her pelvis* from the raised and supported thorax.

In this attitude the divergence of angles is more easily attained than in attitude I. But both actual insertion of the male organ and any profound penetration are more difficult. In order to facilitate it, the woman will have slightly to draw up her legs, and then stretch them again; but this will probably derange the position of the bolster beneath her. The man has also difficulty in exact adjustment. It is best, in all attitudes under consideration here, to keep the phallus pressed *downwards* as much as possible, by the rim of the woman's symphysis; and an experienced woman can help in this adjustment, for she will be fully aware of the pressure against symphysis and clitoris whether intensified or relaxed.

If the extension and suspension attitudes have once been thoroughly mastered, they are generally easier to practice than the habitual medial; and they are more adapted for preventing conception. But practice is necessary here, and practice based upon correct understanding and *visualizing* of the local anatomy. Moreover, attitude II. allows the semen to ebb away more easily and rapidly than attitude I.

* *Cf.* "Ideal Marriage," Chapter XI., pp. 214–218.

III. The attitudes of flexion * in the converse position, are out of the question for our present purpose.

IV. The attitude with the woman astride † is unsuited to the purposes of contraception, from its intrinsic nature, as *it combines the utmost possible penetration with correspondence of the special organs.* Moreover—and this is decisive—this correspondence of *direction* has to be attained *by considerable—in most cases, by the greatest possible—backward pressure of the phallus.*‡ If it is desired to *deflect* the male organ before communion culminates, it can only be done by a change of the attitude of the man's whole body; he must raise himself to a half-sitting posture, so that the upper part of his body forms an acute angle with the surface of the bed or couch. Simultaneously, the woman should draw or incline her body backwards. This double change of *direction* causes the seminal fluid to ebb downwards and out of the vagina, as soon as it has been flung against the posterior wall of the woman's organ.

The "Timing" and control in equitation are entirely in the hands of the woman. It depends on temperament and mood of both partners whether this is felt as an enhancement of joy or is unwelcome.

The advantage of equitation *par excellence, i.e.*, its peculiar intensification of specific pleasure, is lost in the modification we have just described.

V. The sedentary attitude,§ face to face, is the very best and most appropriate method of *anatomical contraceptive technique in actual coitus, combined with axial divergence of the organs.*

If, before the second phase culminates, the woman is able to move backwards and to increase her pelvic inclination as much as is necessary for *axial divergence*, its peculiar advantages are joined to the operation of the laws of gravitation, in draining off the seminal liquid from vulva and vagina.

* *Cf.* "Ideal Marriage," Chapter XI., pp. 218–221.

† *Cf.* "Ideal Marriage," Chapter XI., pp. 221–225.

‡ The capacity for *downward* pressure of the male organ when in full erection (equivalent to backward pressure in Attitude IV.) is greater in some men than in others. As a rule it cannot be brought to right angles with the body, *i.e.*, to a vertical position in a man lying on his back.

§ See "Ideal Marriage," Chapter XI., pp. 225–227.

VI. As to the anterior-lateral attitude,* in which man and woman lie facing one another, but each on their sides, it may conveniently be combined with the modification before culmination, described already in attitude I.

A note may be added on the attitudes of flexion. The phallus cannot possibly be inserted pointing towards the posterior vaginal wall in flexion (as in Plate XI, Fig. 1). It would be easier—especially in the "Laparotomy" variation, where the woman's thighs are opened as widely as possible and her knees bent for the man to "aim" at the *anterior* vaginal wall. But the seminal fluid would then flow towards the *os uteri*, and the uterus, as it relaxed after orgasm, might easily absorb sperms.

Therefore, flexion is quite unsuited for contraceptive purposes. †

Let us now turn to the possibilities of the *Averse* position —Coitus *a tergo*—and keep Plate XI, Fig. 2, before us as we consider them.

The divergence of organs necessary for our present purpose is attained in *coitus a tergo* by the following adjustments: the phallus is inserted from behind and presses the woman's perineum so far as possible backwards and towards her rectal passage. The axis of the male organ, and the *glans penis* are directed at the centre of the anterior vaginal wall. According to inclinations, relative proportions and actual posture of the partners, there is then a greater or lesser degree of downward (or backward) pressure on the male organ.‡

VII. In the ventral or horizontal attitude *a tergo* (the woman lying face downwards and the man over her) this divergence is quite easy, and, indeed, obvious. The ventral attitude is, therefore, most appropriate for contraception, in the case of persons of slender build with flat abdomen, and in women of small pelvic and gluteal development. I would even go so far as to suggest that its facilities for

* See "Ideal Marriage," Chapter XI., p. 227.

† See also above, in Chapter V. of the present book, and also in Chapter VII.—(Tr.'s Note.)

‡ See "Ideal Marriage," Chapter XI., pp. 228–229.

hindering conception are the only special recommendation of this attitude.*

The woman can either lie with her legs closed or open them more or less widely, and, by raising or moving her buttocks and pelvis, a woman of some erotic experience can regulate the degree of phallic penetration and the direction of the ejaculation.

The seminal fluid will ebb out rapidly, owing to the action of gravitation and to the elastic relaxation of the anterior vaginal wall, as soon as the phallus retreats or relaxes.

Many advantages, therefore, in a contraceptive sense, but this unavoidable drawback: that ventral coitus *a tergo cannot be executed except by slender people!* And any *deep* penetration is peculiarly difficult; therefore, this attitude is *psychologically inadequate* for the expression of intense passion.

VIII. In the posterior lateral attitude,† the bodies of the partners may be adjusted to one another somewhat on the lines of the preceding attitude VII., so that the organs diverge. The posterior lateral attitude may be easily modified and diversified, and a deeper insertion at the beginning of communion may be quite possible. But there is a greater liability to *involuntary* (instinctive) invasive movements which would defeat the whole purpose of superficial penetration; and in the lateral attitude, the seminal fluid does not ebb away so rapidly and surely as in the ventral. It is easier to withdraw or deflect the male organ in the lateral attitude, but it is much less easy to be sure that this action has achieved its purpose!

IX. The next attitudes in the averse position are the kneeling and knee-elbow or quadrupedal,‡ which correspond to the flexion group in the converse position.

The typical *kneeling* position of the woman is not relevant to our present purpose. When the woman bends forward so far as possible, *i.e.*, assumes the quadrapedal posture

* In the Table of Attitudes on pp. 240–241 of "Ideal Marriage," the *intentional* prevention of conception has been ignored and Attitude VII. has a blank under "Indications."

† See "Ideal Marriage," Chapter XI., pp. 229–233.

‡ See "Ideal Marriage," Chapter XI., pp. 233–236.

(or that known in gynecology as the *knee-elbow*, in which the woman's body slopes *downwards* from nates to shoulders), the phallus is aimed directly at the posterior vaginal wall. But the prevention of conception is not achieved thereby, as the semen flows straight towards the *os uteri*, and may easily be sucked into the contracting and relaxing uterus (see Chapter V.).

In the less extreme modifications of attitude IX. (there are three principal variations, as indicated on p. 233 of "Ideal Marriage") when the woman's body is *horizontal*, there may result just that *congruence* of phallus and vagina, which we are concerned to *avoid*, if we wish to diminish the likelihood of conception. Only if the woman kneels and bends her trunk *slightly* forward (or stands erect, placing her hands just above her knees)—can the male *glans penis* be directed at the *anterior* vaginal wall; that is, if the man's pelvis is so much higher than the woman's, that his organ is pressed downwards by her perineum. The relative positions and reactions may be gauged by increased or decreased pelvic inclination.

My readers will, therefore, easily see that this particular attitude is unsuited to habitual practice in coitus. But, from the standpoint of *utility in preventing conception*, it has one great merit: the vagina being almost vertical, the perineum pressed backward and the vulva wide open, all these organs facilitate the draining or ebbing out of the semen after emission, more rapidly than in the other possible attitudes.

And there is the further advantage to the woman of *immediately* being able to make *active expulsive movements*, which propel, or shake out the fluid, as soon as the male organ has relaxed and retracted.

The technique of these active expulsive movements deserves some explanation: anthropologists and travellers have described them as practised by primitive peoples, and many women patients and medical colleagues have expressed their wish for further enlightenment here.

It must, first of all, be realized that the *crouching* or *squatting* posture is not the best for this purpose. Expulsion

is easier if the woman stands upright.* There is a certain exercise in modern "physical culture" which is most appropriate, it is termed "knee and pelvis action" in *Bode's* well-known system.

The knees should be slightly and the feet decidedly apart; the distance between the feet should be between 1 and 1½ feet. Then there should be a vehement *thrusting or jerking movement of the pelvis forward and upward, from the knees.* One such movement, if sufficiently vigorous, will generally clear out an appreciable quantity of semen; if the movement is repeated more than once, it is often possible to expel a further amount. Both the gluteal muscles and the abdominal muscles of the front and sides are chiefly active in this procedure. Of course, it is not, *in itself and alone,* at all adequate or reliable to prevent conception, as should be well borne in mind. The method is, moreover, intrinsically somewhat repulsive, and women of delicate sensibilities may feel such distaste that they refuse to practise it.

To sum up: both from the psychological and the utilitarian standpoints I should be inclined to warn against this primitive expulsive method, just as I consider attitude IX., in its variations, *as æsthetically unsuited to habitual or frequent use.* Nevertheless, it cannot be denied that attitude IX., practised in its *slight* modification (see above) and followed by prompt douching, gives considerable chance of preventing conception, and may, therefore, be recommended in exceptional cases, or those in which other methods may, for some reason or other, be impossible.

X. The posterior sedentary Attitude† is well suited for the prevention of conception, especially if the woman bends her trunk forwards and contracts her lumbar muscles, thus increasing her pelvic angle. She should also be careful not to sit too far back across the man's thighs; for, if she does so, it is possible that the male organ may advance further than is intended, especially in partners of slender build, and in cases where the man also bends backwards, for then the posterior sedentary attitude becomes modified into a sort

* *Cf.* Appendix V. to this chapter.
† See "Ideal Marriage," Chapter XI., pp. 236–237.

of posterior-equitation, and this favours deep penetration at the beginning of coitus. But a real sedentary posture must be assumed before the onset of the culmination of coitus. The woman has it in her power, by posture and motion of her trunk and pelvis, to retain the phallus in her sheath or to let it slip out under the *symphysis pubis*, and thus to regulate which part of her anterior vaginal wall receives the ejaculation. Of course, to understand and practise these controls successfully is not for the novice, but is part of the full mastery of erotic technique.

Both in the posterior sedentary attitude, and others *a tergo*, it is possible to diminish the chances of conception by intentionally letting the penis slip out; that is, through appropriate pelvic movements by the woman. Many couples prefer and practise the *Averse* position for this reason.*

The technique resembles coitus interruptus in some ways, but differs essentially in that it permits the upper rim of the *glans penis* and the supremely sensitive and excitable *corona glandis* to touch and rub the lower rim of the woman's *symphysis* and her clitoris, while the shaft of the male organ remains pressed against the vulva and labia. Thus, both partners may achieve orgasm simultaneously, both in principle and in practice. Nevertheless, here, too, the rose has its thorn: the need for concentrating the conscious mind on the *interruption* of the process, *per vaginam*, and transference to the vulva. And, of course, this means both less excitation, and less satisfaction in orgasm, than is obtained in complete merging and *abandon*. *Posterior sedentary* coitus with emission between the *labia* is immensely preferable to coitus interruptus, but, in the former attitude, sperms will certainly be deposited in the vulva and the immediate neighbourhood of the *introitus*. Therefore, a second line of defence is indicated in the form of either (*a*) douching, or (*b*) a chemical preparation. But many couples have become real artists in posterior-sedentary

* Coitus *a tergo*, in various attitudes, especially kneeling and seated, was very popular in Rococo and pre-Revolutionary France, according to contemporary experts. Is it possible that one element in this popularity was the consideration indicated in the text?—(Tr.'s Note.)

coitus, and prefer and practise it habitually with full mutual gratification.

Let us finally compare the respective merits of coitus in the Converse and in the Averse (*a tergo*) positions, combined with *the special anatomical contraceptive modifications which we have detailed above.* The Figures 1 and 2 on Plate XI. should be kept clearly in mind.

They show that in the position *a tergo* there is a great advantage on the side of " safety first." The invading male organ touches the vaginal wall where there is a firm muscular and connective background; while in the face-to-face position a particularly vulnerable portion of the vagina receives the full force of the phallic lunges. I am not aware of authenticated cases of rupture* *in superficial penetration*, but the danger exists, in theory, and should be kept in mind.

The averse position has yet another merit, from the contraceptive standpoint. The woman's perineum is pressed backwards and the vulva is thus widely opened, permitting the semen to ebb off. But this advantage involves inability to dilate and grip the phallus with the *constrictor cunni* muscle. Thus one significant stimulus and charm for both partners is ruled out.

In fact, as regards the whole range of sensation in the genitals, the first or converse position, is far preferable (see Plate XI., Fig. 1). In the averse position (Plate XI., Fig. 2), especially with contraceptives, precautions and modifications, the local stimulation is so slight that the orgasm, especially in the woman, can seldom be attained unless there is either extreme natural ardour or additional manual caresses. These manual and digital caresses may be applied both to the woman's breasts and clitoris, and, of course, accompanied by kisses on shoulders and nape of neck. The posterior sedentary attitude gives special facilities for clitoridal and mammary caresses combined with contact in vulva and introitus.

But here, too, the converse position offers more concen-

* N.B.—This refers, of course, to rupture in the lower posterior section of the vagina, not in the fornix.—(Tr.'s Note.)

trated intensity of sensation, *especially with the "contraceptive modification" of downward pressure of the phallus,* which excites both clitoris and vagina, while the important constrictor cunni muscle is able to perform its natural office unimpeded. The whole vulva becomes a focus of delight, and this is attained without any special manual caresses as in the averse position: the stimuli thus offered are really an adequate substitute for the loss of those provided by deep phallic insertion and contraction of the *levator vaginæ* in full functional coitus.

Therefore, the attitudes and variations of the converse position (as summarized in the Tabular Synopsis on pp. 238–239 of "Ideal Marriage") in regard to the prevention of conception, *i.e., accompanied by careful downward pressure of the phallus*—are very much to be preferred to the averse or *a tergo* position, whose attitudes are summarized on pp. 240–241 of "Ideal Marriage." And this functional *contraceptive technique,* when combined with other methods—such as the insertion of a reliable jelly or paste—deserves careful consideration and is frequently successful.

APPENDICES TO CHAPTER XIII

I. Concerning the Contraceptive Efficacy of the "Safe Period."

Dickinson, Robert Latou; The "safe period" as a birth-control measure. A Study and Evaluation of available data. (This address by *Dr. Dickinson* was printed in the *American Journal of Obstetrics and Gynecology,* Vol. 14 (1927), No. 6, pp. 717–730, and the discussion on p. 836.)

The following briefly summarizes the discussion following his paper:—

In testing the existence of a recurrent "safe period" in women, two methods may be used, in *Dr. Dickinson's* opinion. One may either search for general natural laws, or definite individual idiosyncrasies. In the opinion of the lecturer, the latter method is the more illuminating. An admittedly small number of intelligent and reliable women patients claim to have succeeded in avoiding pregnancy by restricting co-habitation to certain dates in their monthly cycle: but co-habitation at other dates leads to conception. These observations, however, do not seem adequate

as bases for a hypothesis, as unknown temporary factors may have been decisive in inducing sterility. There may be seven possible aspects :—

(1) Results of pregnancy following one isolated act ;

(2) Observations on ovulation in ovaries surgically removed from the woman's body ;

(3) Observations on the effect of radium—or röntgen—therapy, in various stages of the monthly cycle ;

(4) Observations on very immature embryos ;

(5) Systematization and classification of tubal types of movement, and of the changes in the epithelia of the tubes at the time of transit of the ovum ;

(6) Thorough tests of blood metabolism and hormonic content, at various dates during the monthly cycle ;

(7) Thorough tests of " smears " from the vagina.

After full relevant references to contemporary work in Britain and Germany, the lecturer arrived at the following conclusions, based both on his own results and those of other investigators.

There is no date in the monthly cycle on which many women would not and do not conceive. The week before the onset of menstruation is the safest time. For every woman, there is a time in the monthly cycle during which she is really sterile, but this exact time varies in different individuals. Animal experimentation does not guide reliably with human subjects. The maximum of fertility is shown by the eight or ten days immediately following menstruation. The fertility rate from coitus during menstruation itself, is relatively high—13 per cent. of the pregnancies recorded as resulting from isolated and ascertainable acts. Menstrual blood is an excellent medium for the preservation and transport of spermatozoä. The observations on excised ovaries, suggest ovulation between the fourteenth and nineteenth day of the *intermenstrual* period.

Possibly co-habitation dynamically releases the ovum. Changes in the epithelial rhythm in the oviducts and their lining, occur about the twenty-second day. The strongest desire for sexual satisfaction is not restricted to the time of maximum aptitude for conception, but also appears at minimum likelihood, *i.e.*, in the week before menstruation. The author and lecturer reproduced several diagrams and illustrations of the menstrual cyclic changes in ovaries and uterus, and curves of general and sexual vitality in the phases of the cycle, borrowed from German authorities.

Knaus [197a] has published an interesting study of the subject which does not, however, carry conviction, either by its applicability to human beings, or by the author's positive self-assurance. He says : " We may accordingly positively affirm that there is a temporary physiological sterility even in sexually mature and

normal women. Women with regular menstrual periods, at intervals of four weeks, cannot conceive either in the first ten days or after the eighteenth day (till the next period). The fertile period begins with the eleventh day and ends with the seventeenth; and the optimum dates are from the fourteenth till the sixteenth day, in such women."

The very general *contrary* experience, that conception may occur on any day of the monthly cycle, is merely waved aside by *Knaus*, who declares all statements of women who contravene this theory, and say they have conceived from isolated and ascertainable occasions at other intermenstrual dates, to be unworthy of credence! Let us frankly admit that we must critically sift all such statements, and that more lies are told on sexual matters than on any others. But even " pour besoin de la cause," *Knaus* goes too far in his refusal to consider unwelcome possibilities.

Of course, the daily Press at once seized on *Knaus'* statements, and proclaimed to the world that women could only become pregnant from intercourse in the week from the eleventh to the seventeenth day: at other times they were quite safe. They and their husbands presumably met with many surprises. The theologians, in their dilemma (between unlimited and handicapped children and unnatural " continence ") also, of course, fell back heavily on *Knaus*.

This was a misleading and cruel statement—in view of the human tendency to believe what one wants to believe. It is a far more honest and humane service to women, if we impress on them the conclusion of *Nürnberger's* (197b) masterly work: " To-day, there can be no further doubt, that women can become impregnated throughout the whole intermenstrual period."

II. Damage inflicted on Women by Coitus Interruptus.

E. Kehrer gave the following diagnosis in a discussion before the Dresden Gynecological Society, on May 26th, 1921.

" For years, I have drawn attention to the characteristic symptoms and morbid sequelæ of the widely prevalent modern habit of *cohabitatio interrupta*: symptoms and sequelæ, which are both pathologically and anatomically demonstrable. This is indeed, a contemporary women's wrong (or injustice to women) to which I have found no adequate reference in manual or periodical. There is a partial reference in a brief article by *Herzfeld* of New York: ' Coitus Interruptus as a cause of Ovaralgia ' (*Zentralblatt für Gynäkologie*, 1914, p. 686). The symptoms are such as may reasonably be referred to a more or less pronounced and *chronic* congestion of blood vessels and lymph channels in the pelvis. In the severer cases, these include

swelling and sharp itching of vulva and introitus, excessive mucus secretion of either the interior uterine or the cervical membranes —(*i.e.*, persistent leucorrhea)—multiple degenerative ovarian cysts or follicular and luteal cysts, thickening of the sacro-uterine ligaments: *and all these without ascertainable or demonstrable actual inflammation.* All the pelvic organs and the pelvic bones, especially the symphysis pubis, are painfully sensitive to any pressure. These pelvic changes are evident, on palpation. And, in addition, we have a crowd of distressing symptoms referable to dislocation of the sympathetic nervous system: rushes of blood to the head, excessive excitability, nervous twitching, a sense of heaviness and weight in the pelvis, considerable pain in the loins, especially when walking, protracted and profuse hæmorrhages—apart from the normal periods—shooting pains in the breasts, etc.

"The 'hysterical' or 'sympathetic' neuroses, mentioned by medical writers, are generally based on persistent sexual excitement without satisfaction."

III. Damage inflicted by Coitus Interruptus on the Man. (From *Max Marcuse's* "Ehebuch" ("Book of Marriage"), Marcus and Weber, 1927.)

"A frequent, but insufficiently recognized sequel of habitual *coitus interruptus* is disturbance of the male urogenital apparatus, both functional and organic, and especially affecting the prostate gland. These prostatic troubles often cease—especially in younger and less complicated cases—as soon as the habit is given up. In spite of the scepticism and the objections of so eminent an expert as *Fürbringer*—we must conclude that coitus interruptus plays an important part in promoting neurotic and neurasthenic symptoms in the male, even though often in combination with other factors. The more so, the more often it occurs, *and the more often the process of detumescence is deferred by an effort of will* *: and, above all, the greater the individual sensitiveness to such influences."

IV. Notes on the prolonged form of Coitus Interruptus.

In coitus interruptus prolongatus, the woman attains the pleasure and relief of orgasm, as is her due. Nevertheless, all deleterious consequences are not thereby abolished. Even in such cases, there is very frequently "parametritis posterior." In my opinion, this is due to a convulsive and chronic contraction of the retractile muscles of the uterus (Ligamenta sacro-uterina). There are sharp pains, either spontaneous or following any contact with the *portio vaginalis*, or pressure on the posterior fornix.

* Italics by Dr. Van de Velde, in order to emphasize the dangers of the recent increase in *coitus interruptus prolongatus.*

Anything which touches or presses on the retractile sacro-uterina (and the muscles designated E on Plate III in " Ideal Marriage ") or moves the *portio*, causes acute pain : and, of course, coitus is agonizing in such circumstances.

There are various opinions as to the actual causation of these disturbing phenomena. It is highly probable that the abnormal sequence of sexual stimulation is to blame. *Max Marcuse* believes that the real cause is the failure of the *portio* to receive the full jet of the seminal liquid. I am strongly inclined to agree, having laid stress on the *soothing* effects of this *libation* in " Ideal Marriage." It is quite possible that the continued and repeated failure to receive this soothing libation, for which muscles and nerves were prepared, would lead to convulsive irritation. But, I do not think this is the sole explanation. If it were so, we should find parametritis posterior more often in women who are *habitually accustomed to simultaneous mutual satisfaction in coitus but whose portio is not bathed in the seminal fluid.* I assume that the exact cause in cases of *parametritis posterior* following *coitus interruptus prolongatus*, is as follows :

The man brings his partner to the climax of sensation and to orgasm, through prolonged insertion and friction ; but he needs further stimulus before he can have ejaculation (ejaculation after-withdrawal, *bien entendu*). He accordingly continues the motion and friction for a few minutes, and thus again excites and congests the feminine organs ; and the woman may fail to reach a second orgasm. This is the sequence of events, in many cases, as we know and, perhaps, in the cases under consideration.

Even though the woman attains the full physical sensations of orgasm and, to some extent, to their corresponding psychic exaltation and relief, there is always a likelihood that, during *coitus interruptus prolongatus*, her consciousness and even more, her sub-conscious—will be anxiously focussed on possible " accidents," and the results may be serious.

V. " *Australian Movements.*"

This is said to be the term used by English women resident in the East, to denote what we may term " gymnastic contra-ception," as practised by the Australian aborigines. The woman stands upright, with legs well apart and knees relaxed. She then jerks her body vehemently and repeatedly upwards and forwards —(Communicated by a medical man in India).

CHAPTER XIV

CONTRACEPTIVE APPLIANCES AND METHODS: MECHANICAL AND CHEMICAL

We shall in this chapter enumerate and describe the methods which aim at preventing the penetration of spermatozoä into the uterus. We shall also deal with proposed intrauterine methods of prevention, while leaving consideration of *surgical methods* for subsequent chapters.

Mechanical and chemical contraceptives have this great advantage: they can be used easily—in comparison to a major operation. Moreover, they can be adapted or not, chosen or discarded, at each individual occasion: surgical sterilization is much less flexible even if not *necessarily* final and irrevocable.

But this very adaptability to the emotional climate and material conditions of the occasion, *implies also the great defect of the contraceptive appliances:* the necessity of repeating their use every time a pregnancy is not wanted, and the danger, repeated as frequently, that, if there is any failure in proper care, pregnancy will, nevertheless, occur and all be a case of "Love's Labour Lost."

There can be no doubt that anxiety, worry and the trivial—but significant—*dislocations* often inseparable from contraception in practice, take a heavy *psychic* toll. They cause trouble and require attention; they hinder, to a greater or lesser degree, the complete and reckless *abandon* in union which is its very essence; and they deflect the natural reactions of union. Therefore, a really and completely ideal communion between husband and wife is impossible when current and effective contraceptives are used. And the demands of "Ideal Marriage," in the sense in which I have used this term, are opposed both to mechanical and chemical contraceptives, and to the particular

modifications which have been enumerated in the previous chapter, which might be classified as *Functional Contraceptive Technique.*

There is *no* ideal method of preventing conception : that is, no method which has neither disturbing nor unpleasant effects in actual coitus, nor subsequent deleterious possibilities, and which, at the same time, in the expressive phrase of British birth controllers is " fool-proof," *i.e.*, so infallible that no carelessness or stupidity in application can affect its magic efficacy. There is not, and there cannot be, such a talisman.

Nevertheless, the use of some contraceptive is, in my opinion, essential in married life, if more profound, more poignant evils are to be averted. And the hygienic perils, impairment of sensation and nervous irritations, may be reduced to a minimum by taking thought and taking care, while the security offered may, similarly, be greatly increased —if not to " 100 per cent. ! "

The primary essential factor in considering the respective merits of various contraceptives is : do they or do they not prevent *the direct injection of spermatozoä*, i.e., *seminal fluid into the os uteri ? Mechanical* methods, if properly applied, do so. *Chemical* methods act not by occluding the *os uteri*, but by killing, or immobilizing the sperms. And, of course, a chemical preparation placed in the vagina, or fornix, cannot kill or immobilize sperms ejaculated straight from the male organ into the *os uteri*. It may even be that the first force of the seminal jet, if it meets the *os uteri*, may sweep away the small amount of chemical paste or jelly which " protects " the *os*, and make the path clear for the succeeding swarms of sperms. Therefore, owing to two reasons, the probabilities of failure, even with genuine and well-compounded chemical preparations, are always considerable, if there are not simultaneous precautions in technique (as suggested in our previous chapter)—or if not used in combination with some mechanical method as well. Of course, if care is taken that ejaculation does *not* take place into the *os uteri*, a chemical preparation in the vagina and

fornix will prevent the sperms from reaching the *os* by their inherent forward movement; and an honestly and effectively compounded chemical preventive does do this.

A mechanical appliance, on the other hand, acts by preventing the direct *aspiration* or *injection* of sperms during the orgasm, by screening the *os uteri*. Of course, these appliances also make it difficult for the sperms to move upward, after the ejaculation has taken place. But—with the exception of the condom, which we shall discuss first—they do not absolutely prevent such subsequent invasion on the part of organisms so microscopically tiny, vigorous, rapid in motion and tenacious of life.

Thus, neither mechanical nor chemical contraceptives, if either are used alone, can *wholly* guard the uterine portal from the invading hosts.

The logical conclusion to be drawn from both the structure of human organs, and the nature of the gametes, is that these two contraceptive methods, of immobilization and occlusion, though neither can give entire safety if used alone, may give a very great probability of safety *if used together*, and in an intelligent and correct manner. I should even be prepared to state that, if there is a failure when the two methods have been combined, it is due either to defects in the structure *or substance of the articles* used—as sometimes occur—or that there must have been grave errors or negligence in adjusting or in subsequent contacts—as undoubtedly often occur.

I have, of course, no intention of discussing all the appliances or substances advertized as preventives of conception: there are over *150* on the market already, and every month—not to say every week—fresh ones are invented and patented. I shall limit discussion to those contraceptives which I know are useful and effective in many cases, and to those which need mention owing to the publicity and propaganda which they enjoy, but which I consider either unreliable or positively dangerous, as I shall explain and prove.

We will consider mechanical methods first:—

The *Condom* (otherwise preservative, sheath, envelope or French Letter), which is drawn over the erected male organ,

is the only practicable and effective contraceptive for use by the male partner. *If carefully adjusted (and honestly manufactured) it is also the simplest and safest of all contraceptive appliances so far invented*—always bearing in mind the need for such care as I have urged at the conclusion of Chapter XII. It is the only contraceptive which can be used by a married couple of intelligent and responsible disposition without the " double insurance " of a chemical preparation as well. Nevertheless, I emphatically advise the double insurance of a *non-greasy* soluble, gelatinous spermaticide, not only as a second line of defence in case of accidents, but also because the condom should be gently smeared with some lubricant, on *the outer surface, when it has been adjusted, in order to facilitate insertion and increase sensation.*

This consideration is important ; otherwise there must be a certain amount of " dry friction " on the exterior surface, for the male lubricating secretions of " distillation " have been enclosed within the condom—and the delicate fabric of the condom may tear. Moreover, in sensitive and fragile types of mucous membrane, there may be acute irritation, both to the glans penis, the vulva and vagina.* It may be left to personal choice, either to introduce the lubricant spermaticide jelly into the vagina before intercourse begins, or to apply it very gently to the condom when in position. Perhaps it is more reassuring to the woman to feel that she has also applied a protective measure. If the man undertakes to use the chemical preventive, as well as to adjust the sheath, I advise him to place half a teaspoonful of the lubricant preparation *within the hollow tip of the sheath*, to unroll the sheath over his organ and then to apply as much as is necessary of the same lubricant to the outer surface. My readers will easily understand the advantages of this precaution. But there must not be a superfluity of lubricant, and neither too large (nor too small) a sheath must be used. In the first case, it may slip off, in the latter case, it may split.

But, if a viscous jelly is placed in the extremity of the

* *Cf.* In the bibliography at the end of this monograph, the references to *Niedermeyer,* [198] *Littauer* [199] and *Rother* [200].

condom, as in a *cul-de-sac*, there is the advantage of dispensing with the otherwise necessary and troublesome unrolling and inspection of the appliance after intercourse, in order to make sure there are no tears or holes in it. If the jelly is used in the manner indicated, both outside on the shaft of the condom, and inside at the tip, it will serve to clog and capture and inactivate any sperms that may have escaped through a tear in the fabric.

The condom must not be drawn too tightly over the glans penis or tip, but a space must be left. Care must be taken however to expel the air therefrom before use, as, otherwise, the condom easily tears.

It is thus obvious that the use of condoms requires thought and some trouble. Practice makes perfect, and beginners or superficial dabblers in contraception are inclined to despise and vilify a method which is successfully used and highly appreciated by many experts.

Much depends, however, on the quality of the article. Most condoms now on the market are made of rubber. There are some which are reputed to be manufactured from fishes' skin, but are really made of cæcum (or "gut") of young lambs and kids. *Littauer* claims that such sheaths have the merit of never irritating mucous membranes, as rubber products sometimes do. I recommend the rubber products, however, as cæcal condoms often have holes and are more liable to tear. And rubber never irritates if lubricants are concurrently used, as is suggested above. *Of course, a good quality of article is essential.* Cheap condoms are a fatal form of economy. Moreover, the risk of *tears* is much less in newly manufactured articles. Therefore, it is wisest to buy only products of firms with a large turnover, to buy in small quantities at a time, and to keep the condoms before use in *airy, cool, dark and dry cupboards or boxes. Not in pocket-books or packages in a coat pocket! And never use the same article twice.** This

* Of course, this consideration has very important social reactions. How can most working-class households afford an adequate supply of sheaths? Nevertheless, the Society for the Provision of Birth Control Clinics supplies condoms to married women for their husband's use at very reasonable reductions.—(Tr.'s Note.)

has often been suggested from motives of economy. Of course, rinsing, cleansing, drying, powdering with French chalk and rolling up *may* make a condom available for another occasion, but great care is necessary and, even then, not always effectual. A " failure," *i.e.*, a pregnancy is infinitely more expensive than the purchase of fresh condoms —in money alone, not to speak of other matters. One may be penny wise and pound foolish.

The condom offers this final further advantage. It is possible to *test* its adequacy immediately after use. If the sheath is removed and filled half full of water, it can be easily seen whether there is any leakage. If there is none and if the " second line of defence " has also been applied by a chemical contraceptive, then the partners may rest assured that no sperms have reached the womb. What this assurance means to the *mental peace and the mental and physical health* of the wife especially, and the conscientious and sensitive husband as well, must be known to all who—as marriage partners or medical advisers—have experienced the nervous agony which a delayed menstruation involves. . . .

All partners who share or aim at " Ideal Marriages " will also value the free play which the condom affords to all positions and attitudes in communion. Moreover, the whole range of muscular tension, action and sensation is unimpaired—in women who know how to operate their genital and pelvic muscles. Even the impact of the semen against the *portio* is distinctly perceptible, if the partners understand the necessary full penetration and adjustment in attitude. (See Chapter XIII.)

What are the balancing objections to the penile sheath ? Some are important, some apparent only, and others based mainly on prejudice, ignorance and misrepresentation.

The greatest objection of all is—the inevitable interruption of the preliminary excitement and enjoyment, whose steady *crescendo* is of such profound significance. Condoms cannot be adjusted to the male organ until it is in full erection. The peculiarly disturbing and tantalizing nature of the delay

they entail is felt by all men, more or less acutely, more or less carnally, according to their individual temperament and standpoint. If the man is discreet, adroit and both tactful and tender to his partner, he can greatly minimize the disagreeable effects of delay on her excited sensibilities. But, for him, they are unavoidable to a greater or lesser degree. A man who understands the need for care, who is an adept at erotic technique, who has a certain degree of manual dexterity, and a deep and wholesome virility both on the physical and psychological planes, overcomes this obstacle triumphantly, " takes it in his stride," so to speak, and both attains and gives sexual satisfaction. But men of less intense virility succumb to the physical obstacle and psychological suggestions of the sheath ; and a very large number of them truthfully declare that, whenever they attempt to adjust a condom, their erection subsides, and cannot be restored by any subsequent stimulation whatever.

And even more remarkable is the number of happy married couples who unanimously declare that, after having used this method with full success for years, they have found it intolerably irksome and, therefore, abandoned it. A most interesting psychological phenomenon, but one which we cannot now discuss in detail.

But women who enjoy emotional harmony and sexual satisfaction with their husbands are specially apt to find *coitus condomatus* intolerable as a permanent method. Is there a more or less conscious demand, a subjective " *Right to the seed* " ? (This idea has been touched on both in recent and past ages by philosophical psychologists.) Or is there, indeed, what I have ventured to term a physiological " *hunger for the male fluid* " (not only for the sperms but for the other chemical constituents)—in the feminine organism, analogous to the instinctive hunger for salt, lime and vitamines in many other living things ? I would suggest that both physical and psychological factors exist here. And I am of the opinion that the sheath is better adapted for occasional use, *i.e.*, for the " spacing " of children, than for the permanent and complete prevention of any (or any further) conception. In such cases, the

condom should be used alternately with other possible methods.

What of marriages in which there is neither spiritual harmony nor mutual satisfaction? Many husbands, whose senses are more highly developed than their imaginative and emotional faculties, flatly refuse to wear sheaths, both on account of the interruption and dislocation of the initial pleasure, and of impairment of sensation in the act itself.

How far is this second objection valid and justified? It is hard to say whether the ill-effects of the sheath in the final climax are absolute or relative: are they "suggested" by prejudice, or are they the results of psychoneurotic complexes which would be manifest in other ways if not in this?

Probably all these factors are combined, sometimes one preponderates, sometimes another. I do not think it probable that a man whose nervous system was stable and elastic, whose potency was fully normal, and whose sexual tension was adequate, would suffer appreciable loss of pleasure because there was no immediate contact of shaft and tip with the feminine organs. The delicate layer of rubber membrane may be moistened with lubricants, and the whole range of motions and sensations may be enjoyed, in all positions and attitudes and with all characteristic *nuances*, by those who have mastered coital technique. Of that I am convinced. But in this iron age of whirling wheels and concentrated brainwork, nervous irritation and anxiety, how many men are elastically stable nervously or profoundly potent genitally? And there are defects on the distaff side as well. The art of Love—at least in marriage—has fallen into long disuse, and few women of European race, even among those who are beginning to recognize and rehabilitate this art, have the muscular tonicity and suppleness necessary in order to use their perivaginal muscles to the full.*

What of the due relief and gratification of the woman in *Coitus Condomatus?*

For her, too, the *immediate contact* with tip and shaft of

* See Chapter V, above and Chapter XIII.

the phallus is impossible. But women rarely complain that this circumstance prevents their attainment of the climax. It is probable that the very slowing down of sensation enables the man to execute more prolonged friction, thus compensating for attendant disadvantages, as the tendency in men—in modern urban life—is to over rapid and facile ejaculation.

It is also perhaps advisable to point out that although *dry friction* must be avoided, and the outer surface of the condom well covered with lubricant, there must not be too much of this substance, as, otherwise, partners who are not experts do not understand how to compensate for the too slippery coating by extra pressure in friction, and vigour in the perivaginal contractions. But we shall deal further with the use and requirements of lubricant contraceptives later on in the present chapter.

Taken all in all, I consider the condom, used in combination with a spermaticide lubricant—and with due precautions against tears and heedless contacts after removal—a very good method of preventing conception. But its use cannot always be recommended, or assumed in every case. Many men flatly refuse to wear it: a refusal often founded on the primitive trend of thought which says: "The woman has to bear the brunt if she becomes pregnant; well, then, it is 'up to her' to see she doesn't." Whether we doctors excuse or condemn this attitude makes no difference to the men concerned; in the interests of their wives, we must devise other expedients.

The feminine parallel to the primitive male view is as follows: "*I* have the trouble, pain and danger of pregnancy and, therefore, *I* have the right"—sometimes she adds: "If my husband agrees with me"—"to prevent these results, and I will not depend on my husband, but see to it myself." This is no more idealistic than the masculine: "let the woman see to it"; but there are many marriages in which any ideals that may once have existed have long found their grave; and even more marriages in which idealism and ethical standards can only be upheld *if all goes well on the organic side, which is fundamental.*

We must realize this. And the medical profession has long been concerned with the invention and application of appliances which can be relied on to keep the *os uteri* guarded from spermatozoä. And, needless to say, those directly concerned in the matter—namely, women themselves—have taken far more trouble in the matter, and done so from early times and in primitive conditions.*

In 1881, my honoured friend, Dr. *Mensinga* † invented the occlusive pessary known by his name; in order, as he characteristically said,[202] "to put a shield into the hands of defenceless women against male brutality." ‡

The appropriate and effective nature of this pessary has been repeatedly proved, for there have been very few alterations in the original design, and the "Mensinga," or "Dutch cap" is still one of the most widely used preventives. It was given much public attention in the work of *J. Rutgers*, [203] and it became very popular in Holland, its native land; then its use spread to England, and, of recent years, to America. It has been termed the "Dutch pessary" in English-speaking countries. In order to increase the protection it affords, it is customary, at the present time, to apply a chemical contraceptive as well. Thus supported, the *Mensinga* pessary is becoming more and more widely used, even though its name and certain details of structure may be altered. The doctors most

* Even as early as classic times, leaves covered with resinous or herbal preparations were introduced into the vagina before coitus to guard the mouth of the womb. In the letters and memoirs of great ladies and women of the world, at the end of the eighteenth and beginning of the nineteenth centuries, we may read that they took care not to attend a court ball or a dinner party without having protected themselves by means of a sort of "safety sponge," from the possible consequences of these festive occasions. And the Japanese women are famous for their skill in preventing pregnancy by means of fine pieces of rice paper slipped over the *os uteri*. (See Report on Fifth International Neo-Malthusian and Birth Control Conference, London, 1922. Heinemann (Medical Books), pp. 296–297.)

† Dr. *Mensinga* was the *beau ideal* of an idealist, and I venture to term him my friend, for I shall never forget the impression his personality and conversation made on me when I was privileged to act as his clinical assistant in 1899, during the Third International Congress of Gynecologists at Amsterdam. Dr. *Mensinga*, on this occasion, demonstrated the value of mammary massage in promoting lactation on some of the women patients of the University Clinic. He was then a very old man in years.

‡ The author does not necessarily agree that this is always a correct diagnosis.

experienced in practical birth control in various European countries champion this method: *e.g.*, *Leunbach*,[205] in Denmark, *Norman Haire* in England,[204] and *Cooper* [206] in the United States of America. In Germany, the Mensinga is growing in popularity among the medical directors and officers of Sex Advice Centres, and Birth Control Advisory Centres, as may be seen from the testimony of *Bendix* [207] and *Magnus Hirschfeld-Linsert.* [208] I do not think, however, that its merits are as yet fully understood.

Its shape, correct usage and effect may be more clearly shown in Plate XVI. than by pages of description. In order to get a clear mental image of this, and other mechanical contraceptives, I would ask my readers to turn to Fig. 1 on Plate XVI., which again depicts the relative positions and proportions of uterus and vagina. But *nota bene*, these positions and proportions are not fixed and unchanging. The womb may lie at a different angle from the passage; and much depends on the tension or flaccidity of bowel and bladder. In the diagram in question (Fig. 1, Plate XVI.), positions are depicted such as occur when bowel and bladder are both empty, or only slightly filled; and it is absolutely essential to remember *that, if either of these excretory organs, especially the posterior—the bowel and rectum—are filled, they may so press on and alter the vaginal canal that they may quite neutralize the protection which the occlusive pessary is meant to give, and force it out of position.*

Fig. 2 of Plate XVI. shows the shape of the occlusive pessary when not in use. It is almost—though not quite—hemispherical; at least, it represents the substantial segment of a sphere, and is formed of thick indiarubber and set in a narrow circumference, into which a delicate watchspring has been inserted. This enables us to press the pessary together, so that it may be passed through an elastically dilatable slit, such as the orifice of the vulva, and spring back into its usual shape when the finger pressure ceases. In Fig. 2 we see the apparatus in position, as worn by a woman who is standing upright on her feet.

Plate XVI., Fig. 3, shows how the pessary should be introduced into the vagina, held between the thumb and

index finger, and XVI., Fig. 4, gives a section of organs and appliance, showing how it takes effect.

Its use, *when properly placed*, prevents direct contact between sperms and *os uteri*. Of course, vital and motile spermatozoä may quite possibly slip round the edge of the pessary, and enter the *os*. This was how the failures which have been observed in the use of the Mensinga, especially early in its history, when too little care was given to *exact fit*, and when only very small sizes were used. Since then we have learnt that the occlusive should be *as large as the vagina will permit*, and we have also—and especially—learned to use the chemical "second line of defence." Failures have become practically negligible since this was done, *if the pessary be put in correctly*.

The Mensinga pessary is manufactured and sold in a wide range of sizes; for both in length and capacity (as well as angle) the vaginæ of women differ very much. These differences are not only individual; they vary in the same person with age and circumstances, and especially according to the number and difficulty of her births (including abortions and miscarriages). Moreover, there may be other changes in the feminine organs, owing to accidents or diseases, which make it unwise to wear a pessary; or which indicate another size or shape of "cap." Thus, parturition, miscarriage, displacement or any lesion of the genital organs makes it necessary, in the interests of safety and health, to consult a doctor before continuing the use of the same pessary. I would even go further and suggest that any woman habitually using an occlusive pessary, or any similar device, *should visit a medical adviser for consultation and examination every three or six months*.

The choice of a pessary in the first instance should be left to a doctor with adequate gynecological experience. The vagina must be stretched—without painful pressure—by the appliance chosen; and the woman must be thoroughly taught how to put the pessary in position and how to remove it. This necessary instruction and help is far from pleasant for both doctor and patient, and great tact is needed. As a rule, it is best, if possible, to entrust it to a skilled nurse and

to leave *the choice of pessary—following on the local examination—and the final inspection of the fitting of the pessary to the physician.*

As *Mensinga* showed me, the pessary should be introduced with its concavity downwards, *i.e.*, the hemispherical outer surface should be against the fornix and mouth of the womb (see Plates XVI. and XVII.). It must be admitted, however, that doctors are not unanimous here, and some experts place the pessary the other way round, and with the hollow directed upwards, encasing the *portio*. Perhaps there is something to be said for either position. The circumference of a well-made pessary of suitable size adapts itself closely, and the convexity is pressed inwards towards the anterior vaginal wall. But, all things considered, I find the position as originally intended by the inventor the better, and it is much easier, then, to remove the appliance by hooking the forefinger into the circumference.*

How long should the pessary remain in the vagina? This is a very important matter. *Mensinga's* original suggestion was that it should be worn, without removal or alteration, for several successive days at a time. This advice is still often given and followed; and, in my opinion, has been the main cause of discredit to the method—for former failures can now be almost entirely ruled out by the proper use of chemical substances. Modern medical advice is unanimous in warning against wearing the occlusive pessary for more than twelve hours at a time. Of course, this means the loss of a main advantage of the *Mensinga;* for it was *theoretically* a strong recommendation when it was believed that a woman could wear it with perfect security for a month at a time, without having to prepare for each separate occasion.

Theoretically, yes. But any physician or lay person who understands the bacterial conditions of even the normal healthy feminine vagina, and the incessant process of natural secretion from cervix and uterus—again we speak of *healthy* women—must at once realize that it is not practicable—or *cleanly*—to wear the pessary for weeks at a time. And

* A few practical suggestions in Appendix I. to this Chapter.

anyone—however ignorant of physiology or chemistry—who has the least appreciation of the *æsthetic* aspect of sexual matters, and who has *even once* winced before the odour of a rubber pessary which has been left *in situ* for some time—must at once resolve: no, never, never! So we must resign ourselves to forfeit one great theoretical advantage. *The occlusive pessary must be put in position afresh every time.* But, what is "every time"? Before each act of intercourse? Or, as most of its advocates now recommend, before retiring every evening?

"Trifles light as air" may decide or spoil marital happiness and harmony. It appears to me not wholly wise to insert the pessary every evening when undressing for bed, or—in more prosperous circles—"dressing" for dinner. Not wholly wise, for two reasons. Many women who wear rubber appliances in the vagina *frequently—even if not continuously*—soon develop an obstinate and, more or less, profuse mucoid (or even slightly purulent) discharge. There is also the psychological objection to the incontestably valid argument of being and feeling prepared and armed against all eventualities. There is the reaction, profound, painful and subtle in its after-effects of possible *disappointment*—of a languid or laggard husband, who does not meet his wife's tender expectations. A woman once aroused to the physical side of love feels such disappointments keenly, and feels them often as humiliations as well as shocks. I could cite cases, revealed to me in professional experience, which throw a startling light on a hitherto ignored—or, at least, unexplored—side of human and marital psychology.*

I think that those advocates of the Dutch pessary who recommend its insertion every evening, as *a routine toilet procedure*, leave out of account the subtle and typical intuitive sense of a woman in love; her power of feeling in advance, what is likely to happen, or what is not. Or they ignore the existence of erotically harmonious marriages, and keep their attention on those *Mensinga* had in mind when

* See *Naomi Mitchison*: "Some Comments on the Use of Contraceptives," [206a] (Faber and Faber, London, 1930); and Article in Report of Sex. Reform Congress, 1929.—(Tr.'s Note.)

he designed his pessary. But even such unhappy wives have generally some self-protective instinct. . . . I think, therefore, it will be most serviceable to those in quest of advice merely to say: "*Do not leave the pessary in the vagina unnecessarily!*" and to refrain from rigidly detailed directions.

Shortly before intercourse a chemical contraceptive, in addition to the occlusive pessary, should be inserted, as will be described below. Remove the pessary after some hours have elapsed—or next morning—and douche the vagina.

The pros and cons of the occlusive method—combined with a chemical contraceptive—are as follows:—

Advantages:

(*a*) If the pessary is the right size and rightly placed, and the chemical substance genuine, it is practically secure.

(*b*) It can be used by the woman independently, if need be.

(*c*) The vaginal walls are freely able to receive and absorb the male secretions.

Objections:

(*a*) The occlusive pessary is not suitable for *all* women; certain anomalies in the position of the uterus make it almost useless; in others, again, it cannot be worn. Inflammatory conditions of cervix and parametrium are absolute contradictions.

(*b*) The right choice and fitting of the size suitable to each case is a matter for medical or even gynecological advice; and regular inspection is desirable always, sometimes necessary, if a "Mensinga" is worn.

(*c*) The complete spontaneity of coitus is precluded. In positions, attitudes and phallic direction,* it is necessary to be on guard lest the appliance be pushed or lifted to one side. Of course, those married couples to whom the physical side of their union is a mere routine, or a question of male relief only, would see no objection here.

The Mensinga also hinders the play of the perivaginal muscles; for the vagina is distended laterally (from side

* See Chapter XIII. above; and "Ideal Marriage," Chapter XI.

to side) by the appliance. But most European women to-day are not able to operate their pelvic muscles *voluntarily* to the best advantage in coitus; so the *inability* to do so would not represent any appreciable loss to them, or their partners.

These are not the only defects of the method, however. Half of the vaginal vault, and the whole of the *portio vaginalis* are covered by a soft but fairly substantial layer of rubber. This means that the woman can neither feel the *liquid* sensation of the seminal ejaculation (of which she is deprived whenever there is a protective covering between *glans penis* and *portio vaginalis*)—nor even the actual *impact, as apart from the immersion.* The condom, being of more tenuous rubber, allows the *impact* to be felt. These sensations are supremely acute; and, in addition, the possibilities of modification and variation are limited. It must, however, be admitted that we do not often hear specific complaints on these points. The range of sensation and richness of satisfaction in most modern marriages are poor indeed; most partners know not what they miss, and persons of finer sensibilities, and more definite demands, generally dislike the Mensinga pessary so much that they do not think of using it. This is regrettable, for the appliance is one of the best current contraceptives, *if used with a chemical compound as well.* But it may certainly be improved upon.

The solid caoutchouc might well be replaced by thin, specially-prepared rubber, such as is used for condoms. This, of course, will mean that the cost will increase. I have already made experiments in this direction and—although somewhat primitive—the " new models " were most successful in use. There are technical difficulties, but I am in hopes that these may be surmounted, and that modified and improved " Mensinga " and other types of appliances for contraception may be put into circulation.

The disadvantage of the customary *circular* Mensinga pessary* is the *lateral distension* of the vagina, which, in itself, hinders the *gripping* action of the local muscles on the phallus. This disadvantage is greatly diminished if the shape of the appliance is modified into an *oval.*

* As also of the " Ramses " pessary, Fig. 5, Plate XVI.

There have been modifications of oval outline on the market, although the special coital technique we have mentioned has not been the motive leading to their construction. The best known is the "*Matrisalus*," which is shown on Fig. 6 of Plate XVI., in the position necessary when worn, and as it would be in a woman standing on her feet. In many cases in which the Mensinga changes position the Matrisalus remains firmly *in situ*. This is one of its merits. The other is that, in this case, the male organ cannot be deflected by the lower rim. Nevertheless, the Matrisalus is not suited to general use; its construction is not wholly happy, for the upper rim is too narrow: it should have a double curve in order to occlude the posterior vaginal vault. As at present constructed, *it often fails to protect where it is most needed!* And, also, it is as much a handicap to the muscular contractions as the circular Mensinga itself.

I prefer certain pessaries, made in the shape of the supports for retroflexion of the uterus, designed by *Hodge* and *Smith* (Fig. 1, Plate XVII.). Until now, the use of these shapes of occlusive pessaries has been restricted; and their correct adjustment certainly demands greater skill, both from the physician who fits and the woman who wears them.* Moreover, there is very little clear comprehension of the effect of artificial distention of the vagina on the mutual friction and contact of the partners during coitus. There is all the difference, in actual fact, between the effects of an appliance—like the customary circular models—which distend the vagina from side to side, and one—like the retroflexio supports—which distends it from the front backwards, *i.e.*, towards the posterior fornix.†

* The original designers of these kind of occlusive pessaries were partly at fault. In the most frequently used of this group of appliances, the Earlet pessary, the circumference is fairly well adapted to its purpose; but the rubber membrane is arched in the wrong sense! It should be arched in the anterior or front portion, but is arched towards the rear. This is of much greater importance than in the case of the round pessary, for the rubber membrane of the Earlet cannot be inverted as easily as that of the Mensinga. This makes the Earlet pessary inadequate and unreliable; moreover, women tend to use far too small sizes (*vide* p. 434).

† Any physician who doubts these differences should successively introduce a round (prolapse) ring and a retroflexion support into the vagina of the same woman, in the course of a gynecological examination,

I am of opinion that, if our efforts succeed in constructing an occlusive pessary on the lines indicated—with a circumference of strong elastic material and a "roof" of thin condom rubber, curved so as to fit the vaginal vault—this new model will play an important and beneficial *rôle* in future contraceptive technique, although its insertion will always present greater difficulties than that of the circular Mensinga.

We have now fully discussed and compared the genuinely "occlusive" pessaries. The term "occlusive" is often also applied to the group we shall next consider, but I think this use is linguistically wrong. "Occlusive" pessaries, strictly speaking, are those built on Mensinga's plan, and dividing the vagina obliquely into two sections; an upper or anterior, containing the *portio vaginalis*, which is shut off or occluded from the semen; and a back or posterior section, admitting the male organ for coitus.

The *portio caps*, or *cervical caps*, on the other hand, carry out the same protective principle by covering the *portio vaginalis alone;* they leave the vaginal walls—with the exception, of course, of the fornix—quite free. Their advantages are obvious. There is direct contact between the partners over a much greater surface than with the Mensinga; and a proportionately larger absorption of secretions.

The substance still most often used for these protective caps is the same dark-brown, non-transparent rubber as composes the Mensinga pessary.

On Plate XVIII. I have represented *four* out of the numerous types and models in circulation in Figs. 1 to 4. On Plate XVII., Fig. 4, is shown the precise position of the cervical cap in use; it should then protect both against the direct injection of spermatozoa and against their absorption by subsequent *suction*, immediately following orgasm. Detailed descriptions are, therefore, unnecessary. In com-

and ask her to "press" or "bear down" on each. However feeble the action of her muscles may be, owing to lack of training, the difference is clearly perceptible by the examining gynecologist. (See also Appendix to Chapter V. of this book.)

paring these various makes and modifications of cervical cap, I should discard the " Mizpah," a clumsy and complicated arrangement, likely to become a forcing house for micro-organisms unless very speedily removed. I consider the three other makes of equal value in practice, when they are well constructed.

Some women need a thicker ring than others: that depends on individual structure both of the *portio* itself and the *fornix*. And it must be borne in mind that the cervical caps cannot be fitted to *all* varieties, uterine and vaginal. They cannot " grip " either the hard, tiny conical *portio* nor the deeply lacerated *os uteri*. Moreover, a very *shallow*, or asymmetrical vaginal vault, or one lacerated and scarred in childbirth is inappropriate. *In every individual case the cervical cap should be chosen and fitted by a doctor with thorough gynecological experience.*

The cervical caps should have a circumference of moderate thickness, and this may either be of solid rubber or hollow, *i.e.*, filled with air, so long as it can be bent and moulded with ease, during insertion and when worn. I consider the relative height of the domed " roof " equally unimportant—of course, within reason. If the dome is too low, the appliance does not " grip," and slips off; if it is too high, and the woman's vagina is comparatively short, the cap protrudes too far towards the orifice of the vulva, forms folds, and interferes with performance and pleasure in the act. I have seen some such cases in Englishwomen who have been fitted with " pro-Race " models, on *Marie Stopes'* [209] prescription. The pro-Race caps worn by these women were about as high as the " Mizpah " (Fig. 4) on Plate XVIII.

As may be perceived, I do not share the views of those medical *confrères* who assume that approval of the Mensinga occlusive type of pessary implies condemnation of the *portio* protectors—and *vice versâ*. *Both* kinds have a correct basic principle, have given good results, and are appropriate to different sorts of case. But, neither occlusives nor cervical caps should ever be worn for more than twelve hours at a time. The reasons why have been already explained.

Of course, if they are left longer within the body, it " saves trouble " ; but the effects are harmful, as I have frequently observed in the course of professional work. Physicians who view the whole process of contraception as a matter of organic convenience only, may find the *profuse discharge* which result from wearing rubber pessaries continuously, very trifling symptoms. But anyone bearing in mind the repugnance which these discharges must arouse in the close intimacy of marriage, cannot think them " trifling," and must emphatically advise against their risk (see *Anderes* [210] and *Katz* [211]).

Moreover, the cervical pessaries (like the occlusive pattern) are made of too solid rubber. The so-called "thin caoutchouc " is a mere phrase, a Euphemism ; if we examine a typical cervical cap, without bias and with the knowledge and sympathy due to erotic fulfilment in coitus—we must at once recognize that the dense stratum of rubber makes it impossible for the *portio* to feel the seminal *impact* and also that it irks and irritates the *glans penis*. I have had cervical caps made out of the rubber used for condoms. The finished article, *in situ*, is shown in Fig. 5 of Plate XVII. If of the right size and correctly placed,* this new pattern will doubtless prove more advantageous than the earlier, densely solid articles, though not without certain defects. The merits are :

(*a*) The complete contact of the vaginal walls with the phallus,

(*b*) The freedom of muscular contractions,

(*c*) The full play and variation of coital movement and attitude†—but this, be it noted, only in the new patterns of condom rubber, and

(*d*) The seminal impact can be clearly felt.

The defects are :

(*a*) The impossibility of adjustment in certain types of anatomical structure and local lesion or disease,

* See Appendix II. to this Chapter.

† In the articles made of thick solid rubber, there is such risk of displacement that they cannot be recommended for attitudes in which there is close contact and friction between *glans penis* and *portio* ; *e.g.*, in Attitudes III. and IV. (See " Ideal Marriage," Chapter XI.)

(*b*) The difficulty of adjustment in all cases,

(*c*) The lesser degree of reliability as a contraceptive, compared with the occlusive. (At least, this is the case in the solid, dense rubber article hitherto made and worn.) The rim does not fit as closely as that of the Mensinga. Therefore, chemical contraceptives must be used in combination with all cervical caps. If properly chosen and adjusted they should then be efficacious.

Cooper suggests that half a teaspoonful of the chemical should be dropped into the cap and spread over its outer surface as well, and the cap then adjusted. Or, it is possible to put in the mixture, adjust the cap, and smear the vaginal walls with the same chemical by means of a tube and nozzle, or a swab. Of course, it is easy for the cap to slip off if it is too full of liquid lubricant. It is very important for women to be on guard against this mishap. But reason, attention, resolute purpose and practice can conquer difficulties. They are *always* essential in contraception; for neither the cervical cap, nor any other method of contraception is "*fool proof.*"

The insertion of cervical caps is particularly difficult for women who have relatively long vaginæ and short fingers. If they are also of stout and full figure the difficulty is increased. If the *portio* cannot be felt and covered, it is best to try another contraceptive method. (The Second Appendix to the present Chapter gives details which may be practically helpful.) There have been suggestions that the husband should help his wife by placing the cervical cap in position. I strongly warn all married couples not to have recourse to this—apparently obvious and simple—aid. The psychological effects of this, and similar help by the husband, *may be and often are disastrous; both erotically and to the general inter-relationship in marriage.*

Caps of a similar shape and purpose to those of rubber, are made of material which cannot be so easily bent, though retaining a certain elasticity. They are generally of metal or celluloid. On Plate XVIII. (Figs. 5 to 8), a selection

of patterns is represented,* but this selection is not, by any means, exhaustive. *Kaffka*, *Vollmar* and other authorities ([210]) warmly recommend these caps.

On Plate XIX. in Fig. 1 a metal cap is shown fitted on to the *portio*.

It is probable that these caps give a relatively high degree of security. But—in the printed matter and testimonials concerning them, we find explicitly stated that the uterine secretions are enabled to escape over the edge of the metal or celluloid rims.† This is quite possible, in such makes as do not *compress* the *portio*: but, if the menstrual blood can escape with ease—the microscopic millions of sperms can also enter. And indeed, I have read that six hours after the act of intercourse, living and motile sperms were found in the hollow of a cervical cap. We may not, and must not, therefore, rely on these alone: here, too, the chemical second line of defence is—and more than ever—necessary.

The free contact of vaginal walls and phallus is an advantage here, as well as with the rubber cervical caps. But, of course, the somewhat hard covering of the *portio* has the disadvantage of limiting the most acute sensations and possibilities of erotic technique.

Metal and celluloid caps are harder to insert and adjust than those of rubber; although there are women who attain remarkable proficiency in their use. The "Tarnkappe" prospectus says: "The edge of the cap should be smeared with grease, oil ‡ or soap, in order to make it supple and easy to handle. Separate the *labia* with one hand and, taking

* The most recent addition is formed of a new material "Ka-Ha." It is said to be compounded of various *resins*. It is smooth, hard, translucent, pale yellow in colour and, apparently, well suited to its purpose. It has two great merits: it can be thoroughly disinfected by boiling, and it is odourless.

† The prospectus of the "Tarnkappe" states: "During the monthly periods, the Tarnkappe can be worn without the least danger or discomfort, as it loosens itself automatically and allows the menstrual blood and secretions to escape and flow out over the rim." And a medical woman, who has had good professional results with the "Tarnkappe" writes to me: "It is so constructed that the discharge can escape."

‡ A technical error, for both oil and grease should be avoided. They turn rancid and cause irritation. Glycerine is not adapted to dry skins; glycerine and soap should be replaced by a semi-liquid lubricant contraceptive.

the cap between thumb and index finger of the other hand, push it through the *introitus*, into the vagina, with the dome outwards and the hollow or concave surface inwards. Press and turn the cap in the vagina by means of the index finger, so that the hollow is directed backwards, towards the sacral region, and push it gently to the end of the vagina, where it will fit itself over the *os uteri*. Remove the cap at least every two months, cleanse it, rinse it in cold water and replace it." The woman herself is able to adjust and remove this appliance, but it is suggested that she should wear it for far too long at a time.

This is the Achilles heel in all portio protectives or cervical caps. It is generally recommended that the doctor should take the exact internal measurements—either by means of special instruments or of "casts"—and then choose the suitable size out of a whole range of "fittings"; or that a special cap should be made to measure. It is generally advised that the cap should be inserted by a medical adviser, after the cessation of menstruation, and removed before the next period by the woman herself.

The following considerations at once occur to the instructed:

The congestion of the genital organs, including the *portio vaginalis*, is very variable and changeable. A cap fitting closely though easily on one day may exercise a harmful and even painful pressure on the next (*Katz* [211]). The results are quite often "proud flesh," and sore places. And whether the cap fits easily or presses too hard, *it should not be worn continuously for many months, weeks or days.* It becomes a veritable lair or forcing house for pathogenic organisms and for putrefaction; that is, for *dirt. It is a dirty habit.* And the proof is not only always available after a microscopic inspection of the secretions on cervical caps after removal, but it is also perceptible—only too perceptible—to the sense of smell.

The dangers to health, and to the æsthetics of conjugal communion, are *not obviated* by means of the complicated mechanisms introduced into some metal and celluloid caps, (Figs. 2 and 3 on Plate XIX.) with a view to *draining*

off normal secretions and menstrual blood. Any doctor with gynecological experience will understand how little guarantee of cleanliness there can be after even comparatively short periods within the vagina, and, as for the protection afforded by perforated cervical caps alone to such persistent active and insidious invaders as spermatozoä—the less said the better.

The best constructed and adapted of the hard cervical caps seems to me to be the " Special Orga " (*Reusch* (212)). I am somewhat sceptical of the *permanent drainage* of uterine secretions through the network of hollow veins in the little plug ; and should always recommend the addition of a chemical preventive against sperms ; nevertheless, I should be willing to advise the *experimental* use of the " *Orga* " in cases where it was not otherwise contraindicated. The appropriate cases would combine a normally shaped (and not too pointed or lacerated) *portio*, freedom from leucorrhea, and manual dexterity on the part of the woman, with mental clarity and precision. I would not object to the *occasional* wearing of this " Orga " for four days—but not more ! at a time ; for it is made of celluloid.* But bacteriological tests could alone decide whether the risks of invasion or *aspiration* of bacteria were really met and eliminated. And a significant disadvantage remains : the hard substance of the appliances hinders or impairs the reactions in coitus.

Of the simpler types in cervical caps, I should not consider it wholly careless and harmful to try a celluloid shape—(without a cutting or constricting rim)—like the " Tarnkappe " or the ordinary " Orga " patent for forty-eight hours, under the same conditions as the " Orga Special " (see preceding paragraph). It might even prove beneficial, for these celluloid caps are cheap, relatively durable and very easily cleaned. But no mechanical preventive should

* With the exception of solid glass, celluloid keeps best of all substances in the vagina. It keeps much better than any metals. This has been amply proved by wide and varied gynecological experience, of the treatment of displacements of the uterus, by means of pessaries and supports of different materials.

be used *alone*. The celluloid and Ka Ha caps do not permit of the insertion of a chemical compound within their *hollow*—*i.e.*, in direct contact with the *os*, as is possible with the rubber cervicals. The chemical mixture must be placed in the vagina just before intercourse. And, as the portio cap grips and fits the cervix by suction, a slippery substance would make its adhesion difficult.

What of the so-called "safety-sponges" or swabs? These are among the oldest contraceptives, and have become increasingly popular ever since the spiritual leader, *Annie Besant*, made the statement that they were the best and safest method known to her. (*Hirschfeld-Linsert* [213].)

The sponges are sometimes natural, sometimes artificial (porous rubber), and sometimes balls of cotton-wool in thin silk nets. They are inserted into the vagina, as far as possible, before coitus. If they are large enough and correctly adjusted, they certainly prevent emission into the uterus. But it is equally indisputable that single sperms may pass through the cotton wool plug, or reach the *os uteri* after it has been removed. It is easy to understand why popular phraseology has termed these appliances, "Insecurity Sponges."

They deserve this condemnation less if they have been dipped and saturated in a spermaticide solution. Various substances have been used (boracic acid, citric acid, alum, and even lysol and other powerful and dangerous chemicals). The best are, perhaps, the homely vinegar (in mild dilution !) or soapy water. Even then, the method is not suited to regular, habitual use. Women are apt to use far too strong solutions—impelled by nervous fear of "accidents"—and these cause irritation and sometimes serious inflammations of the vagina; and even in proper dilution the liquid acts very unfavourably and disturbingly in sexual communion.

Chemical contraceptives cannot prevent direct injection or insemination into the *os uteri*. Therefore, they cannot be relied on *alone*. They may be combined with a mechanical

appliance, or with the *anatomical contraceptive technique* outlined in Chapter XIII. The essentials of a chemical contraceptive are complex. First of all, it must inactivate and then kill the spermatozoä, and it must do both as soon as possible. Secondly, the chemical contraceptive, while fatal to the sperms, must not corrode the tissues of the organs, nor injure the whole system of either partner by absorption. In short: the ideal chemical contraceptive is a *specific* poison to sperms, but harmless to the human organism.

An example of such a *specific* poison is *Quinine*. It kills spermatozoä; it neither irritates nor corrodes the membranes, and does not harm the body in the tiny dosage which is absorbed. On the contrary, it has a good effect. But there are very exceptional cases who have an idiosyncrasy towards quinine; they react to it with irritations of the mucous membranes and even sometimes the epidermis, leading to rashes all over the body (*Zacharias* [214]). Such idiosyncrasies exist in the case of all drugs—even of ordinary wholesome foodstuffs, in some individuals. They are generally slight and temporary, when the quinine dosage is not excessive, and are very rare in their pronounced, *i.e.*, hypersensitive forms. Therefore, in general, quinine is indicated as an ideal contraceptive, both as a spermaticide and as non-injurious to the human organism.

A substance of equal potency against sperms, but highly dangerous, both to the mucous membranes and the whole organism, is *corrosive sublimate*, a mercury compound; highly effective as a disinfectant for the hands and various instruments and utensils when properly diluted, but *totally unsuited for contraception in any form.*

Chemical contraceptives should not only kill the sperms; they should also contain an element which *coagulates* the seminal fluid as rapidly as possible; and the best substances here are those that coagulate albumen, such as lactic acid. These immobilize the sperms, which are thus unable to advance upwards into the uterus, but are destroyed by the spermaticidal elements in the contraceptive compound. The

importance of *coagulation* has been often overlooked in the preparation of chemical contraceptives.

There is a great variety here, for some chemical contraceptives aim at entangling or occluding the sperms as well as killing them. This is the case with those compounds which form *gas* and entangle the sperms in foam, or with the (earlier) group, which attempts to " bar out " the invaders by a layer of greasy substance. The lubricant or slippery contraceptive has also *some* similar action—not, as a rule, very pronounced, although it can be increased by adding *gelatine* to the compound, an expedient which will also mitigate the extreme slipperiness of such contraceptives.

The best *mechanical* action in chemical spermaticides is attained by the use of gelatine-glycerine as a medium for the specific poison. But the gelatine *stiffens the texture of the preparation* to such a degree that other devices are better and more practicable.

The manner of introduction into the vagina is extremely important, as we shall explain. The substance, whatever its composition or consistency, must be placed as near the *os uteri* as possible. That means, it must be inserted as far *in* as possible. *If a sufficient quantity is used*, there will probably be no danger if it is placed in the posterior fornix, as it will spread over the adjacent tissues and organs.

I advise against the use of *greasy* vaginal suppositories. Cocoa butter is the favourable medium for these, but, as a rule, *the sperms are not disintegrated, but only suspended in this substance.* The number of failures recorded in this connection is arrestingly great; and there are also æsthetic objections: the soiling of underclothing and sheets, the penetrating odour of cheap chocolate. Besides, it is very difficult to remove all remnants of grease from the vagina by the most vigorous douching. Some remains in the interstices and rugosites, becomes rancid and causes soreness. Also cocoa butter is wholly unsuited for use in combination with any rubber pessaries; it injures the rubber and rapidly rots it away. I shall, therefore, give no recipes for the preparation of cocoa butter suppositories,

as I consider them unreliable and otherwise objectionable as well.

Gelatine-glycerine is far preferable. Here is a recipe for vaginal suppositories on this basis :—

Gelatine	. . .	100 grammes
Glycerine	. . .	100 ,,
Distilled water	. .	100 ,,
Quinine Hydrochlor	.	10 ,,

Dissolve the gelatine in water and add the equal quantity of glycerine. Mix and stir and, while stirring, add the quinine. Let the whole steam till the water has evaporated, and then harden in moulds. Any chemist *can* carry out the recipe—but many may decline to do so, for it involves some time and trouble, and the chemist will probably prefer to sell a patent preparation of similar nature. Among such I may mention " Contrapan " capsules. These have a gelatine coating, containing a liquid, which has as ingredients :

1 per cent. of quinine.
3 per cent. of boracic acid, and
0·2 per cent. of oxycyanide of mercury.

A few minutes after having been pushed up to the cervix the capsule melts, releasing the fluid which kills the sperms. Of course, this involves waiting till the gelatine has melted ! " Contrapan " and similar suppositories are sold by all chemists—either prepared from a medical prescription or sold without a prescription, like other drugs and toilet articles, containing no scheduled poisons.

Vaginal suppositories have the merit of needing *no* special apparatus for insertion. But many women have great difficulty in placing them rightly, *i.e.*, at the posterior extremity of the vagina, as near the cervix and fornix as possible.

Moreover, all substances and compounds which melt at body temperature, but must be kept cool and firm before use, are very sensitive to any appreciable degree of warmth,

They should never be carried about for days in handbags, pockets, etc. Again, they may be too stiffly and solidly composed, or their outer surface may have dried, and they will not melt properly even when *in situ*. This means that they are then no protection at all. Finally, these and similar suppositories *must not be too small*. Their shape, which is generally oval or spherical, is a matter of indifference or pure convenience; but they must, when melted, furnish enough liquid to overcome the sperms. I have seen some vaginal suppositories well recommended, and prescribed in certain health advisory centres, which I think unduly small; *i.e.*, "Prophycols," which have the further peculiarity of *melting slowly in the vagina*. *Irma Schuster*,[215] who recommends them, says they take ten minutes—yet liquefying in warm temperature outside. Such solubility is a very uncertain factor.

The same advantage of *handiness*—of not requiring special apparatus for insertion—is shared by the *gasogenous* or effervescent tablets, of which there are several varieties at present on the market. Their manufacture is comparatively simple, but they cannot easily be compounded in the limited premises of a chemist's shop, being extremely hygroscopic, *i.e.*, very sensitive to damp. This is not avoidable, being essential to their efficacy. Thus, they require a very equable and dry atmosphere and, if they are too soft and *friable*, easily crumble away and cannot stand transport. If, on the other hand, they are too hard and dry, they do not dissolve and effervesce in the vagina as they should. Similarly, failure sometimes results when the tablets are well compounded and in good preservation, but the vagina itself unusually dry. Women vary very much in this respect. There are many who are normal or moderate in their amount of vaginal secretions; there are perhaps an even more numerous contingent with excessive moisture, and there are a minority in whom the vagina is too dry. Not only is there insufficient solution, and hence often failure in these cases, but one of the tiny sharp angles or corners of the tablet may hurt the sensitive mucous

membrane, or tear a hole in the condom, and thus cause disaster.*

I would refer those interested in the comparative efficacy of various contraceptives, to the tests on spermatozoä made by *L. Steinhäuser* in *L. Fraenkel's* clinique. I have quoted the portion of *Steinhäuser's* lecture dealing with tablets in Appendix III. to this Chapter, together with *Heinz Küstner's* relevant comments in the discussion.

The gas generated by tablets in the vagina may be oxygen (and chlorine) as in the "Agressit" tablets, or carbonic acid, as in "Semori" and "Sugal." This makes very little difference to their comparative efficacy, as they contain other spermaticidal ingredients. "Agressit" appears to me a well designed and balanced compound; it contains bihydrochloride of quinine (*Kionka* [217]), and it has a definite antiseptic and disinfectant action on the vagina, which may be very helpful, in certain circumstances, as *Kionka* has pointed out.

I do not recommend effervescent tablets as the best form of chemical contraceptive, but, used in combination with coital technique (as suggested in Chapter XIII.) or together with the male sheath or condom, they may be appropriate and helpful for women with excessive normal secretions or definite discharges (leucorrhœa). The same is true when the vagina is slack and distended (as after many births), and so there is no due friction and close contact; for in such cases contraceptive jellies are too lubricant.

But, after the observations of *Küstner*, I would suggest that these tablets are best introduced *a quarter of an hour before intercourse*, rather than two or three minutes. And that they should be changed for another method, if they do not readily and completely dissolve, *i.e.*, effervesce.

The most important chemical contraceptives are the lubricant jellies. Most of them are composed of:

(*a*) A slippery, slightly viscous medium, which may be of

* Even when the tablets effervesce vigorously, there often remains a sharp grain or two which is perfectly capable of tearing delicate rubber as well as hurting human genital tissues. Complaints on this score are not rare.

Irish moss, tragacanth, agar-agar, gelatine, glycerine with starch, or all these ingredients together; and

(*b*) Acids, astringent, antiseptic substances or such that are specifically fatal to sperms.

It is possible to have a jelly compounded to order by a pharmaceutical chemist, by adding to Unguent glycerini, 5–10 per cent. boracic acid, and 1 per cent. lactic acid. Boracic may be replaced by acetic acid or any more specific substance—but in the latter case both the prescription and the preparation of the mixture will be more difficult.

Such jellies are based on a sound theory and observation, and, if containing effectual spermaticides and of the right consistency—neither *too viscous* nor *too tenuous* and watery—they should give perfect protection, especially *if used with a mechanical preventive.*

But they are not beneficial to the local tissues, for the simple reason that they contain too much glycerine. In some morbid conditions, glycerine can be extremely helpful to the feminine organs because the abundant watery secretion it induces relieves chronic inflammations of the upper genital tract. But healthy normal women (and their husbands !) are apt to be repelled by such excessive moisture.

I have based many of these remarks on the work of *James F. Cooper** [206], who is of the opinion that these vaginal jellies are best inserted by means of a glass sound or nozzle, attached to a collapsible metal tube, containing the preparation, as depicted on Plate XIX., Fig. 5. A key is provided with tube and nozzle, and the rim of the tube is rolled and pressed round the key until the jelly has been squeezed out to the end of the glass sound. A further turn of the key (in large size of tube, a quarter or half turn) forces some of the jelly out into the vagina. *Cooper* states that the glass sound may be left on the tube when not in use, but must, of course, be carefully cleansed. A stopper or small rubber tip protects the mouth of the glass nozzle when not in use, and keeps the jelly liquid.

Of course, *individual pharmacists* can hardly be expected

* One of the most active students and advocates of birth control in the medical profession of the U.S.A.—(Tr.'s Note.)

to prepare jellies to order with such elaborate outfits. Another point arises: All who understand the importance of asepsis, will know that it is hardly even *ordinarily* cleanly, not to speak of *surgically safe—and birth control to be harmless, must reach* SURGICAL *standards of asepsis*—to deal in so casual a fashion with an apparatus repeatedly plunged full length up the vagina.

This is the great objection, in my opinion, to the very popular and widely advertised "Patentex" method. There are other objections—the slight spermaticidal action of the substance, mentioned in Steinhäuser's lecture, and the failures * which have been reported to me. On the other hand, Patentex is free from the excessive glycerine which causes such a superflux of moisture, as mentioned above. Its exact content is not indicated on the boxes, which have full directions for use, nor on the prospectuses. It certainly contains, among other ingredients, chinosol, alum, and boric acid. It should only be used together with mechanical aid in covering the *portio*, and particular care should be given to the cleansing and disinfecting of the nozzle. It is best to unscrew this after every occasion, and to cleanse it both inside and out. The tube should be firmly closed till again required. If this is objected to, as involving waste of the jelly in the nozzle, then at least let some of this be squeezed out after use! And be careful not to put the tip over the mouth of the nozzle until the latter has been cleansed. If any woman who uses the nozzle suffers from any vaginal discharge, however slight, she should be most exact and careful, in at once unscrewing the nozzle, and placing it in a bowl of disinfectant, until she can thoroughly cleanse and rinse it.

I think that there is a better method of introducing vaginal jellies. A simple, slightly curved hollow tube or nozzle of glass, with a small rubber ball at one end—such as is used for douching (see Fig. 6, Plate XIX.)—should be used and the jelly drawn out by suction from the container. The width of the tube and size of the rubber ball must be

* It is only fair to say that these failures are not *necessarily* the result of defects in the jelly, but may be due to carelessness in use.

regulated in order to procure an adequate amount of the jelly, *i.e.*, 3 to 4 c.c. Then the nozzle should be inserted to the depth of the vagina, and the jelly squeezed out. The container should be closed immediately after use, and the glass nozzle should *never* be brought into contact with the jelly until it has been carefully cleansed and rinsed, as may easily be done with a good supply of hot water. This method is sufficiently cleanly and wholesome, and so simple that it might well be termed "fool-proof." But it is far less practicable when the jelly is tenacious and thick—*which it should not be.* Slight modifications in the method of preparation could easily obviate this. But it is unpractical to prepare these jellies in small quantities, and becomes almost impossible when further chemicals are added to the glycerine and boracic, in order to correct the tendency to coagulate, or counteract the hygroscopic action of glycerine. Altogether, such jellies need great care, not only in their manufacture, but in their original *formulæ.* Therefore, it is only natural that attempts have been made at large-scale wholesale supply. I have accurate knowledge only of two patents: "Patentex" and "Confidol." The latter is sold with a printed statement that it contains the following ingredients: aluminium acetate, tartaric acid, acetic acid, boracic acid, potassium-ortho-oxychinol-insulfuricum and vegetable jelly. When fairly fresh, "Confidol" is a thick fluid of dull grey colour with tiny flecks in it. If kept for any length of time, *even in a closed bottle,* the colouring takes a greenish tinge, the consistency becomes thinner and more liquid, and a penetrating odour, somewhat resembling that of vinegar, becomes very evident. There is evidently an important chemical change in "Confidol" after a lapse of time; *and, therefore, it should only be used in its original thick grey and odourless state. A tube for insertion is supplied with this jelly.*

What of the comparative merits of the numerous chemical contraceptives? Every medical man either has had, or will have, his own opinions and experiences in this matter. And every married couple in search of the best chemical

preventive, must find it by "trial and error" if they will not trust the expert's advice. It is, of course, necessary to take the special precautions, which I have repeatedly emphasized. Fortunately, there is a fairly wide choice of acceptable chemical preparations; but we have not yet found anything both satisfactory and reliable without additional "mechanical" help.*

We must now consider *vaginal douching* in its contraceptive aspects. In "Ideal Marriage," † while stressing the imperative need for cleanliness in the genital organ, I pointed out that healthy women *should not douche* in order to avoid interference with the natural chemical processes in the vagina. "Ideal Marriage" did not deal with contraceptive problems, and I have now to add that *where contraception is practised, douches are advisable.* For the chemicals used, or the appliances inserted, inevitably interfere with the natural chemical processes; and it becomes desirable to remove these foreign substances when they have accomplished their purpose. This may best be done by douching, flushing or irrigation.

Douching should not, however, be undertaken *too soon* after the act. Otherwise, the chemical spermaticides may be flushed out before they have done their office, while there may still remain traces of semen. And it is far better, both for the specific feminine organs, and for the woman's whole body and mind, that the excitement and satisfaction of sexual communion should melt away and diffuse itself throughout her being, *without further contacts which must disturb, if they do not again satisfy and fulfil.* Just as the physical organism requires rest and, if possible, sleep after this profound joy, so also does the psychic personality of both partners need the *afterglow* of tenderness and passion,‡

* I regret not to be able to place herewith, at my reader's disposal, the recipe for the jelly, which I formerly recommended to my patients. I do not reproduce the recipe here because there proved to be great technical difficulties in its preparation which would be more than the individual pharmacist could tackle successfully. Efforts to meet these difficulties are being made, and I hope presently to give further particulars of the result (*vide* p. 434).

† *Op. cit.*, pp. 308–309, Supplement to Chapter XVI.

‡ See "Ideal Marriage" Chapter XII., pp. 248–252.

without such unæsthetic interludes as manipulations with douche-cans and syringes. Statistics here harmonize with the needs of the human organism. They teach us that the best results are obtained from douching, after an interval of *from two to twelve hours, post-coitum.**

But, if the douche is used *alone* as a preventive, and without the (urgently advisable) additional protection of condom, pessary, or vaginal jelly—then it should not be so long delayed, but must take place *at once.* And if this immediate action is to be effective (*a*) *anatomical contraception* must have excluded direct insemination by skilled technique ; and (*b*) the douching must be carried out as by an expert.

The requisites for expert douching are : clean filtered water, † at a temperature of about 95° Fahr. and a pressure of two feet of water. A clean spray. No rubber utensils or " pumps," or anything of that kind, which can never be kept *clean.* A clean and whole rubber tube ; a clean glass cannula with a button-shaped protuberance at one end, or, better still, a fitted nozzle of such a structure that the vulva can be partly closed so that the influx of water is a little greater than the outflow, keeping the vagina stretched and its rugosites smoothed out. The nozzle must also be handy, and transparent and easily boiled and disinfected. Moreover, douching should take place *lying down, i.e.,* on a large bidet—the trunk should be supine, the legs parted, but not necessarily stretched. And there must be an adequate flow of water—which alone will preclude the use of the " Lady's Friend " and similar appliances, and the habit of douching—or *trying* to douche—in bed.

Of course, really expert douching is rare ; and we need

* Italics here and in some other places are the translator's.—(Author's Note.)

† The addition of chemicals serves no purpose and has often caused damage. Clean tap water brought to body heat will kill sperms in ten seconds. That is, just as quickly as, or even quicker than chemical solutions. Its only superior, in this respect, is a 5 per cent. solution of sodium bicarbonate.[216] But the flushing and irrigating effect of an adequate douche is more important than the antispermatic. The douche, when used alone, has a mainly mechanical action and the few spermatozoa left behind are killed in ten seconds.

not wonder that attempts to prevent conception by *post-coital irrigation alone* very often fail, especially when direct insemination has occurred.

I would not dream of advocating contraceptive douches as absolutely efficacious ; nevertheless, *in combination with other methods*, they are not inferior to the available alternatives ; and especially they may be combined with contraceptive technique in coitus. In certain cases, where there is *no absolutely imperative need for preventing conception, and accidents are not utterly disastrous*, I should not hesitate to suggest this method of expert coital modifications and douching as well.

The douches administered in order to cleanse the vagina from the remnants of chemicals must be equally dexterous and thorough. But the appliances at our disposal for this purpose, leave very much to be desired. *They must be, not only improved, but supplemented.* But, until this has been done, and while there is no adequate instrument, women must make shift to improvise an opportunity of douching in a recumbent posture, must use 2 litres (3 to 4 pints) of water, and, from time to time, compress the *labia* firmly with the free hand, in order that the water shall not run off too soon. Is it necessary to add that the hands should be thoroughly washed, both beforehand and afterwards ?

We have now enumerated and evaluated all the *vaginal* methods of contraception. There are also methods which invade the uterine cavity.

These *intra-uterine* appliances were based on the same principle as the vaginal ; but they soon completely changed their mechanism and structure. The first was a minute *disc*, meant to bar the way into the *os uteri*, and kept in position by a longitudinal portion, like a miniature pencil which was introduced into the cervix,* or by a spring releasing a double fork, in the shape of two short, blunt arms. It was found that these would not remain in position, and the fork was superseded by a *stud*, which was meant to be inserted above

* The whole appliance somewhat resembled an enlarged collar stud.—(Tr.'s Note.)

the *os internum* into the cavity of the womb. The uterine muscles are normally tensely closed at this point, and thus keep a stud in position, so the inventors concluded all was well, and that intrauterine stud, vaginal disc, and the arm of the instrument in the cervix formed a complete barrier to the sperms. These devices were, therefore, termed *Obturators*. Under this name or others, new modifications of the original device are still placed on the market. Some of these do more credit to the imaginative ingenuity than to the physiological knowledge of their designers.* When it became evident that the sperms could quite well ascend into the uterus alongside the *obturator*, the principle was expanded (in both senses of the word), and the intracervical obstacle became one designed to fill up the whole uterine cavity (see Plate XX., Figs. 1 and 2). Experience, however, had further lessons to teach; and both those who wore and those who made these instruments, learnt that they did not occlude the sperms, but acted—if at all—in another way. The latest modifications are shown on Plate XX., Figs. 3 and 4. They are manufactured in great quantity and variety, and still often called *obturators*. A disc just outside the *os uteri* keeps them in place; there is an arm which passes up the cervix and terminates in a ring or rosette of supple elastic material,† filling out the uterus—or in two arms, generally of gold. These appliances are far from easy to insert,‡ and they are worn for months or even years at a time.

* For example, what possible comments are appropriate to a tiny disc-shaped *lid*, held in place by a little ring with *two branches or arms in the cervix?* And this is supposed to keep out sperms! The gynecologist can only shrug his shoulders in grief and contempt. But the vendors and makers of these appliances do a thriving trade! Ignorance and gullibility in all that concerns contraception are quite incredible, still; and charlatanry and dishonest exploitation find this ignorance and gullibility—a phase of the human need for sexual experience and enlightenment—a most lucrative gold mine.

† Generally of silkworm gut or silk, used for years for suturing in surgical operations. It does not absorb moisture and is very durable. It is produced by a variety of silkworm.

‡ The forking arms are sometimes folded together in a gelatine capsule of cylindrical form. They are then inserted and, as the gelatine melts, they spread apart and keep the uterus distended. Their constant pressure on most delicate mucous membrane can, of course, easily cause lesions. And the fact that the spiral cervical spring is made of gold is no safeguard against the accumulation of blood corpuscles and secretions: that is, of matter in the wrong place, *i.e.*, *dirt*.

We do not know, for a certainty, just how these *obturators* act. They undoubtedly do prevent pregnancy in many cases. It is equally beyond question that, in many other cases, they do not prevent pregnancy, but interrupt it. And, apart from this, the presence of such a foreign body in the uterus is accompanied by grave danger to the women who wear it. Several women wear these instruments for some time with no apparent ill-effects ; *but experience teaches that an infection of some kind is eventually almost certain.* The number of cases in which purulent discharges or hæmorrhages supervene is very great ; and the further possibilities are appalling. *Within* ONE *year, Walthard* and *Reist* [218] *observed seven cases in which an "intra-uterine contraceptive" had caused severe local inflammations and, in two of these seven cases, death resulted. Reist* [218] has abstracted and sifted such cases recorded in medical publications : he found 368 illnesses and 15 deaths. Serious and reputable gynecologists condemn such instruments unreservedly. "*Walthard* goes even further and demands that all doctors who insert *steriletts* (a synonym for these appliances) should be accused of dangerous practices, as it is now a matter of general knowledge that this is the case. In 1917, *Guggisberg* warned Swiss doctors against the sterilett, pointing out that they made themselves liable to prosecution for serious bodily injury through negligence, if they used the method." [219]

I feel it is incumbent on me to quote and emphasize these warnings and, in conclusion, to quote *Engelmann* on the subject :

" The judgment on all intrauterine pins must, therefore, be as follows :

" 1. They are not able to prevent conception with certainty although, after it has occurred, abortion generally follows ; further :

" 2. They have proved dangerous in many cases, causing impaired health, injuries, septic inflammations, and even deaths.

" The most dangerous of all, are the instruments with forked arms." [219]

The medical man must pass an almost equally unfavourable verdict on the so-called contraceptives which consist of silk threads, or very thin unrustable silver wires, shaped into rosettes, stars or rings, with a slender silk or metal thread and glass disc protruding from the *os*, while the main body of the appliance is intrauterine. These have also caused many injuries. They can be worn by some women without apparent harm at first; but, even in these cases, infection is almost unavoidable after any length of time. Other women, again, suffer from hæmorrhage and abnormal discharges from the first.

It might be supposed that these serious results arose because of the thread hanging out into the vagina—which is, of course, normally full of (*not necessarily harmful*) bacteria—introducing micro-organisms into the uterus, formerly free from them. *Gräfenberg*,[220] therefore, had the idea of removing the thread from the ring—at the same time losing the means of relatively easy removal from the uterus.

He has, therefore, substituted a pattern constructed by himself: a "silk star" (Fig. 4, Plate XX.) made of three crossed and intertwisted silkworm threads bound together with silver wire. And, by preference, he uses a rolled ring of silk thread bound round with silver wire (Fig. 5) and placed inside the uterus. Of late he has replaced the silk by an equally pliable ring of silver wire (Fig. 6).

Here, too, we are in the dark as to the exact "*modus operandi*." The Russian specialists *Stefko* and *Lourié*,[221] (who, incidentally, reject the method) are of opinion that the changes induced by the presence of the silk in the uterine lining, so modify its secretions that spermatozoä cannot live in it. *Gräfenberg* does not agree here, and the cases in which pregnancy has occurred—whether in the uterus *or the tube*—in spite of the ring, confirm his view. It appears that fertilization occurs, but that the ovum when fertilized cannot adhere, in the proliferating uterine membrane, and is expelled.

Thus, *Stefko* and *Lourié* consider the ring to act as a

preventive of conception; and *Gräfenberg*, as a preventive of pregnancy or impregnation. (See the definitions and distinctions in Chapter XII., above.)

But the action of the ring is quite frequently neither the one nor the other; a pregnancy occurs and develops in spite of its presence—most unwelcome and dangerous circumstance to both parties concerned. If an abortion occurs, as is generally the case, the resultant complications are even more serious than usual; and, if pregnancy goes to term, the ring must have injurious effects on the child.*

But the list of dangers is by no means exhausted. *Gräfenberg* has recommended and defended his method with great intellectual honesty and fairness; but the specialist who reads his descriptions, in the light of knowledge, finds the objections implicit in the method itself. It needs a highly expert gynecologist to be able to conduct so thorough an initial examination of the woman, *as to discover every possible contraindication*. It needs an adept in bacteriology to be sure that *Gräfenberg's* stipulations: "The genital secretions must, therefore, be examined carefully. If they are at all septic, or if the vaginal flora is suspicious, one must be careful about using a ring." (Again he warns against "serious vaginal catarrh"†) *But how is it possible permanently to guarantee healthy vaginal and cervical secretions?* Every menstrual period *may* cause changes for the worse. And, if the secretions *are no longer healthy*; and if there are frequent hæmorrhages, acute purulent discharges from cervix or urethra, recent miscarriages or flaring or recently contracted salpingitis—what then? Only a doctor well acquainted with these disorders can realize what it may mean to have to "fish" and grope in the uterine cavity, under such conditions, and extract the ring,‡ with small forceps or

* *Stefko* (222) found that silkworm gut set up chemical reactions in the developing embryo, leading to anomalies in embryonic metabolism. These, again, can lead to disturbances of structural and functional development, especially in the nervous system.

† *E. Gräfenberg*: "The Intrauterine Method of Contraception," p. 614. Report of Sexual Reform Congress, London, 1929.

‡ The ring must, of course, be removed, in any severe inflammations because of this irritation. Its insertion, if gonorrhea is even suspected, is absolutely forbidden. But gonorrhea may be contracted after insertion. *Gräfenberg* says: "I have recently examined two women patients

an instrument shaped like a buttonhook; or what damage may be done before the ring, which is then, of course, a centre of irritation, has been removed.

Naturally, the values, defects and indications of every process must finally be decided by experience—the experience of many operators and many patients. We have not yet collected and collated this wide experience of the intra-uterine ring. *Gräfenberg* considers his own results with the method so favourable on the whole as to warrant recommendation—his record in both practice and research guarantees his sincere belief in its value. But the expert reader of his report, who digests its contents and compares it with other experiences, must gravely doubt whether *Gräfenberg's* successors will be so favourably impressed; and he must also realize that, in less responsible or able hands, grave harm will ensue.*

Therefore, I would state my opinion to my colleagues, and my advice to patients and readers, as follows:

I understand fully the theoretical and practical advantages of the method, and can well believe that many women will continue to prefer it, despite all risks. I shall await the results—which will, no doubt, be reported in due time—with keen interest. But, *I should not, myself, in any circumstances, accept the responsibility of advising any woman under my care to contribute her personal quota to these results, but should strongly advise against it, as, in my opinion, the risks are too great.*†

It is also possible to treat the uterine *mucosa* by cauterization and so render implantation impossible. We do not refer to intense cauterizing processes which, as above-mentioned, are to be avoided, but to slight applications of

who went on wearing their rings after gonorrhea had ascended to the upper genital tract, because their present *doctors could not find the silk, even under narcosis*. They only recovered, after the silk had been taken out—though quickly." (Paper read to Berlin Birth Control Conference, 1928.) *Let my readers realize and visualize all the details these few words imply!*

* Apparently this warning has been realized in Great Britain. A case is known in which the ring was inserted into an *infantile uterus*, causing very serious injury; in spite of the emphasis laid by *Gräfenberg* on the need for examination and *sounding* beforehand.—(Tr.'s Note.)

† See also the opinions of *Blacker* and *Leunbach* in the Report of the International Medical Research Committee for Birth Control, 1930.

milder acids, which are used in gynecological practice in treating certain morbid conditions of the mucous membranes.

Here, too, there are various possibilities. The most desirable in any given circumstances depends on the exact date in the monthly cycle.

Rosenblatt [228] is of the opinion that the mucosa of the uterus interacts closely and continuously with the ovaries; so that it is possible to slow down or inhibit ovulation by treatment of the uterine cavity, and thus bring about cessation of the *menses* for some months. It is not certain whether *Rosenblatt's* theory of the exact processes at work is correct. *Robert Mayer*, in his criticism of *Rosenblatt's* work, believed that the treatment inhibits the normal process of *regeneration* or reconstruction after menstruation, in the epithelial cells and mucosa. Whatever the exact mechanism may be, it is certain that *Rosenblatt* executed repeated *mild* intrauterine cauteries in several women, shortly after the end of a monthly period, and observed that menstruation did not occur for several months. The obvious conclusion from these observed facts is the possibility of repeated mild cauteries, with the deliberate intention of preventing pregnancy for a definite period. But I advise against this method, for, not only is it undependable, but, as a general rule, voluntary sterility should never be secured at the price of prolonged amenorrhea, with all the general organic reactions of such a serious suppression of function.

Certain other doctors, chiefly Russians, have approached the problem from another angle. They have *periodically cauterized the intrauterine mucosa every month*, between five and seven days after the cessation of the menses; that is, on the tenth or twelfth day of the menstrual cycle, *or*, in other words, just before the normal date of follicular rupture and ovulation. They have done so, *only once* on each occasion, and with the intention of affecting the uterine cavity in such a way as to inhibit the vigour and motility of the spermatozoa at the time when the feminine organs were most apt for conception. This attempt, however,

ignored the complexity of factors involved, and was doomed to defeat.

These experimental efforts aimed at the *prevention of conception.* But *prevention of impregnation* was the purpose which led to a change of date of the *single mild cauterization* to the twenty-eighth day of the cycle, just before the next menstruation would fall due. The cautery would prevent the mucosa, which were ready to receive a—possibly fertilized—ovum from performing this office.

The best date appears to be the twenty-fourth or the twenty-fifth day of the monthly cycle ; as may be deduced from what has been said in Chapter IV. of this book. (See also " Ideal Marriage," Plate V.)

If no ovule has been fertilized, the cycle is not held up or dislocated ; or at least not appreciably so, and this is a most important consideration, both for the general health and for genital well-being and capacity. For the upper (superficial) layers of the uterine membranes normally proliferate, and are shed away if there is no fertilization. If the ovum and spermatozoön *have* fused, however, and the fertilized zygote is denied *implantation, i.e.,* a nesting place, there is *no great interference with physiological processes.* And should ovulation, and, therefore implantation, have occurred sooner than might be supposed, there is still again no great dislocation, as the fertilized ovulum is shed away, with the epithelial cells to which it has just adhered, and menstruation occurs at the normal interval.

We speak of objective facts. For the personal feelings and standards of the author of this book, there would be all the difference in the world if it were definitely certain that a pregnancy had begun. *But, as in such a case we cannot be certain on this point. . . .*

I should, however, be very loathe to recommend this procedure as a matter of *routine,* apart from isolated instances. For, not only is impregnation always *possible* though not *demonstrable ;* in addition to and quite apart from this possibility, we must never regard intrauterine interference as wholly free from the risk of injury, however slight and however efficiently executed. Therefore, when

the uterine mucosa is to be cauterized, as a measure of exception,* only experienced gynecologists should be entrusted with this treatment, if it is to be both successful and non-injurious.†

Unqualified persons, and often women themselves, have a fatal tendency to reckless experiments in this direction, causing incredible injuries, invalidism and loss of life. I must, therefore, abstain from detailed description of procedure, and merely *warn all women never, in any circumstances, to attempt interference with the uterine cavity, nor to permit unqualified persons to do so.*

I refer medical men and women to those pages of gynecological manuals and text-books which deal with intrauterine operations and treatments. *Döderlein's* article on chronic metritis and its treatment, in the second edition of *Veit's* Standard Manual of Gynecology is indispensable, and particularly pp. 220–232. Though written over twenty years ago, it is not yet out of date. And *Döderlein* repeatedly stresses the need for caution and care, including care in avoiding the use of too strong caustics. With these conditions and reservations—and only then—and in expert hands—intrauterine cauterization can be a most valuable benefit in preventing the establishment of pregnancies which would be fatal or disastrous.

APPENDICES TO CHAPTER XIV

I. Some Suggestions as to the Use of the Occlusive Pessary.

The pessary should be lightly smeared over with a soluble spermaticide jelly, so that it can be introduced without pain or difficulty.

The woman should have emptied her bladder and bowels before adjusting the pessary. She must take the posture which suits her best for the adjustment: some women prefer a half recum-

* The indications for such measures of exception can be easily imagined, but the greatest caution is advisable.

† Non-injurious; for these treatments, though simple in theory, are not altogether easy in practice. The *entire* uterine mucosa must be *equally* cauterized. This is essential.

bent posture, others prefer to stand upright, legs and knees wide apart and trunk bent forward. But the typical position, as recommended in literature, is crouching or squatting, and it will be found advantageous to support the base of the spine against the edge of a firm low chair or footstool.

The woman presses the circular rim of the pessary between the thumb and third (or fourth) finger of her right hand, so that the appliance takes the outline of Fig. 3 in Plate XVI. The cupola of the hemispherical pessary is directed upwards and forwards: she does not touch the upward edge of the rim, but supports and guides the lower, with her index finger. The vulva is held wide open with the left hand. She pushes the pessary into the introitus and upwards and backwards, until it is no longer visible. If the orifice is narrow, the pessary can be twisted a little to one side; it will adjust itself horizontally within the vagina. But the woman must see to it that the cupola is well forward. Then the lower extremity of the rim is pressed as far as possible, inwards and *then* drawn forwards, with the index finger, towards the pubic bone.

It ought to rest just behind the lower posterior rim of the bone —the *Symphysis pubis*.

If it fits well, the rear segment of the rim will adjust itself behind the *portio vaginalis* in the posterior vaginal vault. If the lower—front—segment is not properly fitted the appliance is wrongly inserted, and must be taken out and readjusted.

Shortly before coition, it is as well to feel with the fingers whether the rim fits properly and, if necessary, push it straight.

The male organ must pass into the vagina *behind the rim of the pessary*, as will happen naturally if the appliance is rightly inserted and, if the phallus is inserted at a correct angle with the vaginal axis.

The pessary should be removed in the same attitude in which it was inserted. The curved index finger should be hooked into the lower—frontal—rim, and the pessary drawn out. It should be at once washed under running water, gently dabbed dry, wrapped in a clean handkerchief or little towel, and put away in a closed box.

It must not be folded together, as one of the folds may easily split. If it has any unpleasant odour, it should be at once discarded and a new pessary bought.

II. Directions as to the Use of Cervical Caps made of Rubber.

The woman should squat as low as possible, preferably on her heels, after having first thoroughly washed her outer genital organs and hands (this is understood in all practical contraception).

The cervical cap has been thoroughly cleansed and smeared

with a non-greasy lubricant chemical contraceptive. (See Appendix I., above.) The circumference of the cap is then slightly pressed together, and it is inserted with the hollow or concave side uppermost and forwards, that is, in the exactly *opposite* manner to the occlusive pessary. It is pushed up to the *portio*, and then generally fits round that organ, after a final pressure with the fingers.

The woman must then test correct fitting, by feeling the rubber membrane, and should be able distinctly to perceive the protuberant *portio* through the rubber. She may press downwards with her abdominal muscles, which will facilitate matters. If she can reach the *portio* with her finger, she should press the whole rim of the cap firmly against the vaginal vault.

All this is quite feasible with care and practice, but should be tried over more than once, before it is actually used for an act of intercourse.

The cervical cap (portio protector) must remain *in situ* for some hours; but not for more than twelve. The combined action of the rubber cap and the chemical contraceptive is more effectual if the cap be not removed too soon.

Before removal, the vagina should be douched with warm (not hot !) water. The woman should squat, insert her finger, hook it into the rim or pull the little string or tape attached to the rim; remove the cap and give herself a final douching.

The same rules for cleansing and keeping the cap hold good as for the occlusive pessary.

The least pleasant part of the use of the cervical cap is its removal. But that can be mastered if the vagina is not too narrow.

III. Notes on the Efficacy of Certain Contraceptives. (From the *Zentralblatt fur Gynäkologie*, No. 20, 1923.) (Report of Breslau Gynecological Society.)

Steinhäuser said: Of the vaginal suppositories on the market, " Spermathanaton " shows poor results. Certainly two-thirds of the sperms were dead after half a minute, but the full destruction of all the spermatozoä could only be achieved in five minutes.

Our tests tend to show that the most variously compounded vaginal suppositories—with the exceptions, perhaps, of " Agressit " and " Semori "—are much less effective than the spermaticide solutions, of which the very simplest, such as diluted vinegar and water, or pure filtered water at a temperature of 110° Fahr., deserve priority, in ease of preparation, convenience and high spermaticidal power.

Heinz Küstner made tests of the contraceptive " *Sugal*," on Mr. Councillor *Pohl's* suggestion. Mr. Councillor *Pohl* analysed the chemical composition of Sugal tablets and found

that, on being dissolved in water, they released carbonic acid. If one Sugal tablet was dissolved in 10 cubic centimetres of water, the resulting alkalinity was equal to that of a 6 per cent. solution of sodium bicarbonate. When introduced into the vagina, Sugal made no difference to the acidity of the secretions, within ten to fifteen minutes.

After an hour had elapsed, the secretions of a moderately moist vagina were strongly alkaline. If these alkalized secretions are then mixed with seminal fluid, some of the sperms are rapidly killed, but, as the two viscous fluids *do not thoroughly mix*, between 30 and 40 per cent. of the sperms retain undiminished vitality for hours.

If half a tablet of Sugal is placed in about one (1) cubic centimetre of semen, and the mixture stirred and shaken vigorously for five minutes, there is no perceptible loss of the sperms' motility! In ten minutes' time, some sperms lie stagnant, in fifteen minutes, between 70 and 80 per cent. are out of action, and, in twenty minutes, no motile sperms remain.

Küstner does not feel justified in calling this method very reliable, after the tests described above.

The printed slip of directions, sold with the tablets, says one tablet should be inserted between two and three minutes before intercourse. Even if this tablet melts rapidly in an exceptionally moist vagina, there is not a sufficiently thorough mingling of the alkaline vaginal secretions and the semen, to destroy the spermatozoa forthwith. If the tablet does not melt, even the sperms which come into direct contact with it, take between ten and fifteen minutes to become immobilized. But previous investigations have revealed the presence of spermatozoä in the cervical canal, between five and ten minutes after ejaculation.

Thus, it is quite possible that some sperms may escape the action of " Sugal " and reach the upper genital tract.

In all such laboratory tests, we must always clearly distinguish between results under the microscope and the results in those human genital organs where the preparations are put to the proof.

CHAPTER XV

PERMANENT SURGICAL STERILIZATION

By the term Permanent Surgical Sterilization of a marriage, we understand to-day, in practice, the operative or artificial sterilization of the wife, by means of procedures which occlude or remove the Fallopian tubes.

Of course, a similarly permanent feminine sterility could be attained by removing the uterus, or at least its major and upper portion. Or, equally so, by removing the ovaries. Formerly, *ovariotomy* was the only method of sterilization in women practised in surgery, and this operation, of course, *castrated* or *de-sexed* the woman.

To-day, such drastic methods of sterilization are almost wholly superseded, as they are either too risky or recognized as harmful and essentially *irrational.*

Therefore, as surgical technique has also advanced and improved, when we sterilize permanently to-day, we do so, as a rule, by operations on the tubes and, more rarely, on the womb itself.

The reasons leading to the acceptance and development of permanent feminine sterilization have been threefold: purely medical, social and eugenic.

Medical grounds include such severe illnesses and morbid conditions of the woman's organism that pregnancy must necessarily increase the already existent danger to life. These diseases include disturbances of the cerebral and nervous centres, tuberculosis, cardiac, kidney and eye diseases, as well as diseases of metabolism and of the blood supply. Further, various organic displacements and malformations. But to enumerate all the accepted medical indications for sterilization would be irrelevant to our present purpose, as well as exceeding the limits of our space. I

refer those interested to *Placzek's*[224] " Künstliche Fehlgeburt und Künstliche Unfruchtbarkeit " (" Induced Miscarriage and Artificial Sterility ") and to the *Magnum Opus of Pankow.*[225]

But the justifiability of surgical sterilization is not confined to medical grounds alone. Social and eugenic reasons may cause medical men to be consulted as to whether such an operation is advisable or not. Of course, sterilization is, to some extent, and unavoidably, mutilation. Therefore, a very high sense of responsibility is called for in any such decision. But, in my opinion, the unhesitating and absolute condemnation of sterilization, in any circumstances, which is still pronounced by certain individual doctors and members of the legal profession, is an untenable position.

Moreover, social conditions extend and interact with medical; thus, excessive childbearing causes some illnesses and aggravates others; constant unwholesome housing conditions, chronic hunger or bad food, and the exhaustion they cause, may so undermine a woman's powers that no unbiassed physician can refuse a surgical sterilization, if contraceptive methods are inapplicable or have repeatedly failed. In my opinion, the operation is wholly justified, after most careful consideration, careful explanation of its results, to *both* partners in the marriage, and if there have already been many children, or more than one, and *after written consent from the husband,* and earnest requests and representations on the part of the woman herself.

Of course, absolute impartiality and mathematical exactitude are unattainable, even by the most conscientious of us, in respect of the eugenic and social aspects. But are we really quite infallible as regards even medical indications? Do we not often see illnesses, of whose fatal termination we are in no manner of doubt, that yet eventually have a different result? If purely medical indications are not held to justify surgical sterilization, then it must be left to the individual knowledge and conscience of each individual medical man to decide afresh, according to the circumstances

of each case, whether he can meet the demand for sterilization on other than medical ground.

We must also bear in mind that there are cases of hereditary defect or disease ; at least cases of incurable disorders, mental or physical and shared by two (or more) successive generations of the same stock.

An affirmative decision becomes very easy for a surgeon, if the children already born have recognizable symptoms of their mother's disease ; and if the prospective parents wish to spare future children such an inheritance. If the defect or disease has been transmitted by the *father*, further pregnancies should, of course, be avoided, but all other methods of lawful prevention are to be preferred to the permanent sterilization of a perfectly healthy woman.

Operations for permanent sterilization are generally applied to the Fallopian tubes (oviducts), or the tubes and the uterus (in the region of the junction of the tubes with the cavity of the womb). They aim at preventing the free passage of ovum and spermatozoä along the tubes, and their meeting and fusion : *i.e.*, fertilization.

The first tubal surgical sterilization was performed by *Lungren* [226] in 1860. It was a simple *ligature* or tying of the tubes by means of silk threads and was, of course, bilateral. The same procedure was used by other surgeons for some years, they tied both the tubes, sometimes in one place and sometimes doubly. But failures and undesired pregnancies very frequently resulted. These painful accidents, which no one then could understand, strongly discredited the whole idea and repute of surgical sterilization.

L. Fraenkel [227] was able, however, to prove (by means of animal experimentation), that the patency of the tubes was very seldom obliterated by *ligatures* ; and that there were often interstices and folds or rugosites through which the infinitesimal germs of life could easily pass. In almost half his tests, *Fraenkel* found the ducts quite " patent " and unaffected. Various medical authorities (a selection of names and references is given under Nos. 228 to 231) then

confirmed the validity of *Fraenkel's* results in human subjects.

Nürnberger[231] was able to form his judgment on the basis of investigations by microscope and Röntgen rays. He declared that the atrophy of the muscles of the oviduct at the exact place of ligatures finally loosened the threads and re-opened the tubes. *Kalliwoda*[229] had occasion to make a very illuminating discovery, in a case where two successive pregnancies had occurred after bilateral ligature of the oviducts. One of the tubes was completely occluded, but there was an aperture in the other, just at the place of the ligature, which had given access to the ova liberated from the Graäfian follicles on the ovary. Another arresting example of the stupendous ingenuity of "Nature," when the great function of transmitting life is in process.

Therefore, we may conclude that ligature of the oviducts is not certain enough to be permissible as "sterilization."

A further variation of tubal occlusion, which was considered very promising, was the bilateral section, or cutting, of the oviducts (salpingectomy), between a double ligature. This was done by *Beuttner*,[232] who operated from above by opening the abdomen. Almost at the same time, *Kehrer*[233] advised that salpingectomy should be performed from below, by way of the vagina.* *Fritsch*[234] went further and removed the section of oviduct between the two ligatures. But even this did not always prevent impregnation.[235-236] *Friedemann's*[237] technique of crushing or obliterating the tubes was also defective. In all the five cases in which *Flatau*[238] tried this expedient, pregnancy nevertheless, resulted. In order to avoid the possibility of *fistulæ* involving the abdominal cavity, methods were devised,[239-240] by which a portion of the oviduct was removed from its peritoneum and then excised. The stumps were deposited in the *ligamentum latum*, and the peritoneum sutured over them. Nevertheless, here too, there have been distressing failures.

* *Dührssen* had preceded him, making his first bilateral salpingectomy (by thermocautery between two ligatures with catgut) through the anterior vagina. He first published accounts of these cases in 1899 in his book: "Die Einschränkung des Bauchschnittes" (Karger, Berlin).

Madlener[241] has probably had the best results in this field, by modifying *Friedländer's* obliterative method as follows: The tube is lifted by a tentaculum forceps and lightly held at an angle, about midway in its length. Below the suspended portion, it is then obliterated by means of a forceps (*Doyen's* procedure); this means that the *broad band* (or ligamentum latum) is also affected. When the tube, which has been compressed to the consistency of tissue paper, has been released, a fine suture is made over the fresh furrow in the broad band (see Plate XII., Figs. 3 and 4). *Madlener* performed the operation eighty-nine times without one failure. *Walthard*[242] made some slight modifications, but carried out an operation on the same essential lines in 225 cases, and found it so successful and suitable for its purpose that he never tried any other method. But even he had one failure, resulting in a conception.

To summarize results, we may say that all the methods which aimed at barring out the sperms through occlusion of the *pars interstitialis*, or the middle portion of the tubes, have proved extremely unreliable, with the exception of *Madlener's* operation. And this is not *theoretically* strange, for, even after the severest cases of salpingitis, pregnancies have been recorded if the junction of uterus and tubes was still negotiable.

The next step in gynecological surgery was, therefore, the excision of that portion of the uterine wall where the tubes join. *Neumann*[243] had excellent results with this method, and many other surgeons were in a position to confirm them. But there is a possibility of failures, and, therefore, not only must the wedge shaped, or triangular, excision from the uterus be most carefully sutured—in order to prevent the formation of fistulæ through which the ova could swim—but at least 2 or 3 cm. of the oviduct must also be removed, and the ends deposited between the fibres of the broad ligaments and, finally, carefully covered over by the peritoneum. If these necessary precautions be taken, there is very little likelihood of pregnancy.

Recently, *Peitmann* [244] has experimented with loosening of the tube from the uterine wall, instead of triangular excision. He makes an incision of 4 centimètres in length, through the peritoneal membrane, which covers the junction of the tubes and uterus, in such a manner that the uterus itself is also slit for about one additional centimètre. The tenuous tubal, muscular sheath is then removed completely and the *pars interstitialis*, so far as possible. The loosened tube is then extirpated for a length of three (3) centimètres, the end sunk into the *ligamentum latum*, the uterus closed by deep sutures, and the folds of the peritoneum carefully resutured (see Fig. 2 on Plate XII.). The whole operation is quite bloodless, and thus is claimed to be superior to uterine excision with its risk of hæmorrhage.

A total extirpation of the oviduct is contraindicated, for the same reason, and is also unnecessary. Until now, triangular excision of the *pars interstitialis* has not been superseded, apart from *Peitmann's* variation, as described above. Even though there is the risk of relaxing or breaking sutures, leading to uterine fistulæ and restored patency of the tube, this is not a conclusive argument against the operation, as good surgery and careful suturing are almost certain to avoid such mishaps.

But certain gynecologists have been so far impressed by this risk as to invent a method which, while leaving the tube itself intact, removes the abdominal extremity of the oviduct from the peritoneal cavity in order to bar the way for the ovum to enter the womb.

As *Stoeckel* shows, the first surgeon to indicate this possibility was *Fritsch.* [245] He drew the tubes (on both sides, of course) through the inguinal canal, and sutured them under the peritoneum. *Stoeckel* [246] himself advises that the oviducts should be embedded between the muscles and outer layer of the abdominal wall, and the peritoneum sutured over them without catching the tubes in the stitches. Finally, in order to provide a definite safeguard, the uterus should be "fixed" by means of reefing the round ligaments (by *Alexander-Adams'* operation). A very similar

procedure is possible by way of the vagina, as *Rühl*[247] and *H. Freund*[248] have indicated.

There are many modifications and variations of tubal sterilization, which we may omit to treat fully, as they have no new basic principle, or because they are, obviously, of no value.

We have already mentioned that both supervaginal amputation and total removal (extirpation) of the uterus, (hysterectomy) may be theoretically included among methods of sterilization. But they are only used when the womb itself is seriously injured or diseased—excepting in certain cases of pulmonary tuberculosis, where it is claimed that the removal of the major portion of the uterus has been of benefit to the patient, by obviating further depletion and loss of blood during the monthly periods.

Let us now recapitulate our conclusions as to permanent sterilization by operative surgery.

Simple ligature of the oviducts is inadequate and unreliable. The triangular excision of the tubes from the uterine wall, and implantation of the severed ends of the tubes in the ligamenta lata, has, on the other hand, proved, on the whole, good and relatively free from complications.

Madlener's method of tubal obliteration is surgically less complicated than excision, but probably less reliable. In such cases, it is advisable to implant or embed the tube in the abdominal wall (extraperitoneally) and, at the same time, to lift the movable uterus forwards and upwards.

Extirpation of the ovaries (Ovariotomy) is wholly objectionable, and no reputable physician would advise or perform this operation for sterilizing purposes to-day. It is *mutilation*, that is, it *unsexes* and *unwomanizes* in every sense of the word, and brings irreparable damage to both physique, mind and emotions.

Methods of sterilization, dependent on partial or total removal of the uterus, are only justified if there is a simultaneous severe uterine lesion or disease (such as metritis or myoma) giving rise to excessive hæmorrhage.

In pulmonary tuberculosis, it is perhaps beneficial, in

certain cases of profuse menstrual losses, to amputate the upper portion of the uterus (*i.e.*, above the cervical canal). Otherwise, the periods should be preserved, in any circumstances, for two reasons, physiological and psychological. First, because the uterus has not only a *genital* but also a *general organic* rôle as an organ of secretion and elimination, and, secondly, because the woman is apt to develop inferiority complexes if she is prematurely deprived of the characteristic signature of her womanhood.*

Even the best surgical technique in hysterectomy cannot avoid an increase of the affected area, and, thence, a corresponding increase of risk.

All *tubal* methods of sterilization are liable to fail in practical prevention. But, in the methods recommended, mastery of operative technique makes failures very few and unlikely.

Two significant factors, however, must never be forgotten. First of all, we must always recognize that an operation undertaken in order to prevent the aggravation of already existing disease or lesions, may be attended with dangers, owing entirely to that existing disease or lesion. And there is also the psychological and emotional attitude of the woman and her possible or probable reactions. I would say that, even when the sterilization is desired and requested as an irrevocable permanency, it should be so arranged as to be *temporary*. For, even though the desire for a cancellation of the operation is very seldom expressed, the consciousness of irrevocable sterility often causes psychic complexes and convictions of inferiority which may be avoided—if the function can be restored.

Therefore, I am of opinion that the operations severing the tube at its junction with the uterus are superior to those which attack the oviduct midway (*e.g.*, *Madlener's*), because the patency of the organs may be more easily restored in the former case than in the latter. The extraperitoneal

* Even in cases of pulmonary tuberculosis, hysterectomy should not be complete, but a portion of the organ should remain for purposes of secretion. We know now that the womb has not only external but also important internal secretions, and if the womb is entirely removed, there is sympathetic degeneration of the ovaries.

implantation of the tubal ends (as practised by *Fritsch-Stoeckel*), may also be recommended, as permitting the restoration of function.

We have dealt with the permanent surgical sterilization of women. What of the same procedure in regard to men ? It is very rarely attempted for the particular reasons we have under consideration.

The operation corresponding to ovariotomy in women is the total ablation of the testicles in men. This has been and still is more frequently practised, all over the world, than its feminine analogue. Ethnography, history and literature are full of instances : the eunuchs of African and Asiatic custom ; the castration of wounded men and prisoners in warfare ; and the self-mutilation of certain *cults* and sects. Hysterectomy, or removal of the uterus, would have, as its analogue in men, removal of the penis ; this has been practised, in the same circumstances as ablation of the testicles, though less frequently. Of course, no medical man in modern times would think of such mutilations for sterilizing purposes. The removal of the characteristic male gonads has as permanent and profound effects on the whole organism as ovariotomy in women. The patient himself would only consent in some cases of acute and agonizing local disease, and we have a much simpler and easier method of male sterilization at our disposal.

This method is the analogue of salpingectomy ; it is termed Vasectomy, and consists in the bilateral cutting of the *vasa deferentia* between two ligatures. It is technically very simple, but it is hardly used at all for purposes of sterilization, except in some countries, for the prevention of paternity in condemned criminals and mental defectives and degenerates of pronounced type.*

Certainly, it has been recently much in vogue, but as a method of " rejuvenation " (by *Steinach's* operation) † ; and

* Although the problems raised by this possibility are of the utmost interest, we must here leave them untouched. There is an exhaustive discussion and bibliography in *Joseph Mayer's* work. (249)

† " Theory and Practice of the Steinach Operation." (250a) Published by Messrs. Wm. Heinemann (Medical Books), London.

the loss of reproductive power has been accepted as part of the price for restored zest and potency.

Is it justifiable to rule out vasectomies for the sterilization of marriage? Or, is this refusal the result of male privilege and dominance? I think the former is true: for, while the occlusion or removal of the oviducts does not affect the function of the essential feminine gonads—the ovaries—any interference with the vasa deferentia does affect the external secretions of the testicles and probably—at least in the cases of *younger men*—their internal secretions as well, in the long run.

Until further results are available, I regard the following two indications as the only justifications for destroying potential paternity:

(*a*) When the birth of children is to be avoided because of heavy hereditary taints *on the male side*, while, simultaneously, one or both partners refuse to practise contraception.

(*b*) When pregnancy must be prevented in a marriage between a woman who is still young and a husband *over middle age*. In these cases, vasectomies and vaso-ligatures may be advisable because, in *older* men, they stimulate endocrine activity of the testicles. Of course, psychological considerations must be given due weight in such cases. The whole subject deserves our fullest and most unbiassed attention; and it is very much to be wished that all cases of vasectomy for other reasons (whether penalization or rejuvenation)—should be carefully followed up, as thoroughly and for as long as possible, in order to obtain light on many obscure and debatable facts.

There is a final group of semi-surgical measures aiming at permanent sterilization by treatment of the mucous lining of the uterus or *endometrium*. Even though, at present, their practical significance is small, they are worth mention and some description, as—especially in respect of the junctions of the oviducts, or *pars interstitialis tubæ*—they have not only historical significance, but also, probably promise for the future.

The various methods by which it was formerly attempted to destroy the endometrium need only be enumerated, for they proved, not only undependable, but dangerous. They included the use of hot steam, deep cauterization with chloride of zinc, and so forth. Moreover, we have since learnt, through the investigations of *Aschner*, that the endometrium has other purposes besides those associated with pregnancy. We know that it is an organ of elimination, which cannot be extirpated without damage to the woman's organism.* Therefore, these procedures are obsolete. It remains to consider the *pars interstitialis tubæ*.

Even before *Lungren* had undertaken the first ligature of the oviducts, *Froriep* and *Kocks* [251] attempted to obliterate the orifices of the tubes by treatment with the galvano-cautery *from below*, *i.e.*, by way of the uterus, in order to make further pregnancies impossible. In 1912, *Proudnikoff* [252] stated in his thesis on "The Artificial Sterilization of Women by means of Electrocoagulation": "The uterine orifices of the tubes were cauterized in nine women by galvanic currents. Two weeks after the operation, the orifices were obliterated. The results were confirmed some time afterwards by tests on *uteri* removed owing to Carcinoma."

These results appeared encouraging, but the method itself did not inspire confidence, because it was necessary to operate in the dark, out of sight, and hence, to some extent, relying on chance. But, within the last three years, it has become reasonable to hope for further developments in this direction, thanks to the efforts and reports of *von Mikulicz-Radecki*. [253] The preliminary requisites are now in being. The construction of a "Tubal hysteroscope" has enabled the investigator to keep the orifice of the oviducts under observation while operating, and the particular technique of electrocoagulation—in itself most appropriate here—has become so efficient of late that it meets the highest requirements. Probably, it will be some time before the bloodless method of sterilization associated with the name of *v.*

* Of late, the experiment has been made—and, so far, successfully—of transplanting portions of endometrium—when a morbidly affected uterus has had to be removed—and thus preserving the menstrual function (*Van Bouwdijk Bastiaanse* [250]).

Mikulicz-Radecki, becomes generally available in practice. But his clinical standing and his record in research alike guarantee that when his results are translated into practice they will be thoroughly effective and non-injurious. And they give us the happy prospect of an ideal method of permanent sterilization in a comparatively near future.

But there is another and equally significant question still unsolved. How far will it be possible, after galvano-cautery of the tubal orifices, to cancel the resultant sterilization by excision of the affected areas, and re-implantation of the tubes ?

Therefore, we have every possible reason, meanwhile, to concentrate on perfecting and extending the so-called *temporary methods of surgical sterilization.*

CHAPTER XVI.

TEMPORARY SURGICAL STERILIZATION

LET it be clearly understood in advance that *temporary* surgical sterilization does NOT mean an operation whose efficacy automatically decreases or ceases with time. *It does mean certain surgical operations, designed and executed with the definite intention that it should be possible to cancel sterility and restore fertility by further surgical methods, if and when altered circumstances made it desirable to do so.*

We need not discuss the indications for temporary sterilization of women in detail. They are the same as the indications for permanent sterilization.

In theory, however, a distinction is justified. Temporary cancellation of fertility is appropriate when there is still a possibility that the conditions which forbid parentage may alter and improve with time. Permanent sterilization should be reserved for irrevocable and, so to speak, *incurable* cases. In other words, the indications for temporary sterilization are *relative*, and for permanent sterilization, they are *absolute*. Of course, there is a good case, in theory, for those who maintain that so drastic a procedure as sterilization should only be undertaken if and when there is absolute and permanent need for making parenthood impossible. But the opposite case is more defensible, namely, that every sterilizing operation should admit of cancellation, if required. We have stressed the reasons for this view more than once in the preceding chapter. Altered circumstances—such as, for instance, the loss of a child by death—or even more than one—or the changes of a fresh marriage partnership—may make the demand for another pregnancy so imperative that even (otherwise) cogent objections cannot stand against it.

There is another aspect of the need for temporary sterilization with which we of the medical profession are well acquainted. A husband may be quite in agreement with the future infertility of the marriage, but may entirely refuse any measures or methods which diminish or disturb his satisfaction in coitus. Such an attitude, though reprehensible and discreditable ethically, is quite frequent in practice; and it would be inhuman to leave the woman unprotected by the resources of modern science.

So we have to judge each case on its merits, advocating permanent sterility here, and there again a temporary and remediable infertility. *But temporary sterilization has the great advantage that it is lasting and effective so long as definite surgical measures of repeal and cancellation are not applied.* Therefore, both for the possibility of changed circumstances and for its subtle reactions on the woman's mind and emotions, temporary sterilization should generally be preferred—in principle—to permanent.

Thus, we must make two demands of temporary sterilization. The first and most important essential is that the organs in question should not suffer more than can be helped, or be affected generally, and that, during their artificial latency, they should keep all their capacity of normal function. The second requisite is that the *restorative operation* should be as simple as possible, and should not injure the delicate organs involved.

Many of the surgical sterilizations described as "temporary" meet neither of these requirements. They are essentially permanent—take for instance the triangular excision of the *pars interstitialis* and ends of the tubes; although, in that case, a difficult and complicated cancelling is not wholly excluded.

We cannot enumerate all the genuine or spurious—temporary methods. Those readers interested in the matter may be referred to the works by *Naujocks* [254] and *Littauer*.[255] And, as many of these "methods," though ingenious, are far from practical, it would be a waste of

time to describe them fully.* Let us then consider the really practicable and effectual possibilities, both in principle and in actual procedure.

Their purpose is :

(1) *To prevent the ovum from passing out of the ovary into the tube.*

(2) *At the same time, to keep the tubes and ovaries, so far as possible, intact and functional, and*

(3) *To ensure that a restorative operation can be easily and harmlessly carried out.*

The first requirement may be met in different ways. Either the ovaries or the tubes with their wide bell-mouths must be *encapsulated* or *enclosed* so that they are no longer freely accessible in the abdominal cavity ; and it must be borne in mind that such operations are always *bilateral,* as we have to do with duplex organs. The pouch or enclosure into which either tubes or ovaries may be placed has also double possibilities : it may be *intraperitoneal, that is, formed by the operation itself, within the abdominal cavity ; or extra-peritoneal,* that is, outside the abdominal cavity.

There is, therefore, the following choice of methods :

(*A.*) Encapsulation of the ovaries.

(*a*) Intraperitoneal,
(*b*) Extraperitoneal.

(*B.*) Encapsulation of the salpinges (mouths of tubes).

(*a*) Intraperitoneal.
(*b*) Extraperitoneal.

All four methods have been tried with various modifications, and surgeons and gynecologists are still endeavouring to improve on them. It is not too much to say that this problem of surgery is the very focal point of professional interest at the present day. Within the space of one year,

* *Kocks,* who is quoted by *Naujocks,* made an incision in the *os uteri* and formed a flap or cover out of each of the two lips ! Obviously, that could give no security. *Zomakion* [256] and *Haendly* [257] have tried to partition the vagina into two corridors, the one leading to the *os uteri,* the other ending in a *cul-de-sac* and serving for coitus ! The objections and defects must be obvious.

no less than three articles by eminent clinicians have appeared dealing with the technique of temporary surgical sterilization. [255, 258, 259]

I had the good fortune to be able to report a case of successful restoration of fertility in an article [260] which gave the signal for this marked demonstration of interest, although there had already been very great eagerness to learn more in this field. My operation was first carried out in the year 1908, and has a certain importance in principle as well as in technique. I shall, therefore, quote the remarks of *Littauer* [261] who has himself frequently adopted the method —in order not to go into unnecessary detail.

" *Van de Velde's* operation is as follows: The abdomen is opened and the uterus drawn up. The *Ligamentum latum*, with tubes and ovaries, is lifted. Then the *Fimbria ovarica* is cut through, close to the ovary, thus increasing the distance between the lateral portion of the tubes and the ovaries and making the latter organs more easily movable. Then an incision is made, through both layers of the *Ligamentum latum*, parallel to the lower rim of the ovaries, and somewhat shorter than the ovarian circumference at its widest. The ovary is then slipped through this slit, sideways, and great care is taken that the extremity of the tube in contact with the *Fimbria* remains in its original position at the rear of the ligament, and that the tube itself is not bent. The slit is then carefully sutured; if necessary protected by a double row of stitches, and by further sutures from the front of the ligament. The vesico-uterine portion of the peritoneal cavity is then closed by double sutures of thin catgut, taking full advantage of the *ligamenta rotunda*. During convalescence, special heed must be taken to avoid stretching the sutures by allowing the bladder to become overloaded without relief.*

" There can be no longer any doubt of the suitability and efficacy of *Van de Velde's* operation, as the patients are not inconvenienced in any way by the new position of their ovaries; the ovaries themselves are only slightly affected in

* The crucial stages of this operation are represented on Plate XIV,, Figs. 1 and 2, and Plate XV., Figs. 1 and 2.

their circulation and, therefore, presumably in their metabolism; their essential epithelial tissue remains uninjured and, therefore, the formation and extrusion of ova is uninterrupted and their possible release from the encapsulation apparently easy to perform. I do not attach great weight to the unfortunate experience of *Pfeilsticker* in ovarian encapsulation. He observed a large abscess in the area of the right *ligamentum latum* and right groin, with pus formation during nearly two months, but these lesions are just as likely to have been due to a chance infection as to the necrosis of the ovary to which *Pfeilsticker* attributed them, and which he ascribed to the operation itself.

"All that *Van de Velde* had hoped for from his operation was realized, when he made a fresh abdominal section in order to restore the power of conception to a woman whom he had temporarily sterilized five (5) years before. There were no unforeseen malformations or adhesions, and the tubes were intact and had approximately kept their normal position. The somewhat extensive covering suture was very carefully opened throughout; partly by sharp, partly by blunt, dissection.

"The vesical peritoneum only tore in one place; and the slight laceration was at once repaired with a few stitches. *Van de Velde* had another opportunity of confirming the efficacy of his operation by personal inspection, in the case of an autopsy on a woman who had died of tuberculosis. And *Schauta* has also performed a relaparotomy after a similar (ovarian) operation; it is not known with what result.*

* I have quite recently had the opportunity of seeing a further restorative operation by *Littauer* himself. The case was not fully typical, as *Littauer* had been obliged to remove the left oviduct and the right ovary, in the course of the original abdominal section, about eight years previously. Therefore, instead of enclosing the remaining ovary—when it was moved forwards from its original position—in the manner initiated by myself, through closing the space between bladder and uterus—he restricted himself to forming a smaller pouch on the left-hand side, by wrapping the ovary in the anterior fold of the left Ligamentum latum, and the left Ligamentum rotundum.

Experience proved that this method fulfilled its purpose of sterilization. For, although it was shown that the right oviduct was perfectly normal and patent, there had been no symptoms of pregnancy.

The Relaparotomy was undertaken, as the woman had recovered from

"In his famous case, *Van de Velde* had to solve the problem of what to do with the ovaries, which he had placed in the vesico-uterine cavity. He took into consideration both the risk of slight lesions to the ovaries, and the persistent invasive ingenuity of the spermatozoä,* and resolved to refrain from another removal of the organs. And he was right, for after only one menstrual period, following on the relaparotomy, the woman conceived, was confined at term, and later again gave birth to a child."

Littauer then had two failures (one pregnancy and one atrophy of the ovaries); but he himself admits that these may have occurred because he had neglected my warnings—not to operate during menstruation, nor following an abortion; nor too soon after a delivery; and not to disturb the circulation during the operation. He had performed a surgical sterilization in these cases immediately after evacuating the pregnant uterus by abdominal section, as is also the method of *Polano* (258) and *Alfieri*. (259) †

We shall not at present consider either the respective merits of a necessary—*therapeutic*—evacuation of the uterus

tuberculosis, which was the ground for her sterilization, and both she and her husband desired a family.

The restorative operation consisted in the release of the ovary from its envelope—not without a certain amount of difficulty—and its replacement, backwards through the Ligamentum latum. It was easy to attach the ovary to the posterior surface of the uterus; the tube was deflected with equal ease, so that its mouth could be attached in the immediate neighbourhood of the ovary. Thus there has been the utmost possible provision for the passage of the ova released from the ovary straight into the tube.

The case has given light on two important points. First of all, it has proved that the replacement of the ovary backwards through the slit in the Ligamentum latum is quite easily performed. (I shall not venture to affirm that it would be so easy in *typical* cases.) Secondly—and I think this circumstance is much more important—it was evident that the adhesions formed by the ovary in its narrow resting place, with the surrounding peritoneal surface, were sufficient to make the more capacious "*Van de Velde* or Pouch Encapsulation"—as *Littauer* termed the envelope formed in my operation—unquestionably preferable.

Both the operating surgeon and myself independently concurred in this conclusion, and this was of special interest to me, as it throws light on the results to be expected from *Blumberg's* operation, and makes possible a practical comparison between his procedure and that initiated by me.

* Of course, what is meant is the persistence and ingenuity of those forces of nature by which the ovum passes into an oviduct, even under unusual circumstances: where there are ovarian anomalies.

† It is suggested that lay readers would do well to refer to Plates I., II., III. and IX. to visualize the organs involved, as well as to Plates XIII., XIV., and XV.—(Tr.'s Note).

by abdominal section or vaginally; nor the whole problem of artificial abortion.* Of course, surgeons must have good and sufficient reason for terminating pregnancies in this manner, in certain cases. And it is equally comprehensible that they then think immediate sterilization advisable; it would be equally wrong to subject a woman so seriously ill to a fresh pregnancy, as to keep her in hospital till the uterus had recovered, and then perform abdominal section anew.

My operation is not, however, suitable for combined uterine evacuation and sterilization. I consider it, rather, as an independent and isolated procedure, which may obviate the need for artificial termination of pregnancy, or which may be combined with such necessary occasions for abdominal section as, *e.g.*, chronic appendicitis, uterine displacements, and so on.

Littauer has modified my operation as follows: He leaves the ovaries in their normal position but alters the position of the tubes. He extricates them and draws them forwards, through slits in the ligamenta lata; he then attaches them to the front uterine surface and encapsulates this area from the rest of the abdominal cavity, as in my operation. †

Let us refer to the classification under (*A*) and (*B*). I follow the method indicated by (*A*) (*a*), and *Littauer* that of (*B*) (*a*): that is to say, I draw forward the *ovaries* and *Littauer* the *oviducts;* and we both enclose the respective organs in a *pouch* enveloped in the peritoneal membrane. ‡

Polano operates in a very similar manner to *Littauer;* that is, on the lines indicated under (*B*)(*a*). *Alfieri*, on the other hand, prefers (*B*) (*b*), for he removes the extremities of the tubes into the space *below* the peritoneum. (This area has been made accessible by an incision in the vesico uterine fold, and displacement of the bladder, in order to

* See Chapter XIX.

† Figs. 1 to 4 of Plate XIII. show the details in a graphic manner. They have been taken from *Littauer's* work.

‡ The lay reader should study Plate I. I have marked those portions of peritoneum which are drawn together and sutured, with two asterisks. When the sutures have been made, the space between bladder and uterus is shut off.

permit of a section into the lower half of the uterus and removal of the product of conception.) The defects of this method are due to the likelihood of adhesions which may permanently occlude the tubes, and occur more easily than under the conditions of (*B*) (*a*). Moreover, *Alfieri* makes an addition, in the form of a ligature round the tubal extremity, which he has removed from its original position. Therefore, we can hardly class his operation among the methods of *temporary* sterilization.

There are, however, genuinely temporary sterilizations on the principle of (*B*) (*b*). Among them I should class *Sellheim's*[262] implantation of the intact tubes between the muscular layers of the ligamentum latum ; and the *Sellheim-Nürnberger*[263] procedure, of drawing the mouth of the tube through an incision in the posterior vaginal vault, and its fixation at the place of incision. The organs are said to tolerate this operation well, but, so far, nothing further has become known about relevant results. The same must be said of *F. Freund's*[264] modification. He anchors the tubes to the anterior vaginal vault. I cannot believe that this particular variation will succeed enough to become widely adopted.

The immediate contact of so sensitive an organ with the vaginal passage and its bacterial flora appears to me too risky. I should consider *Pfeilsticker's*[265] innovation preferable ; this is on (*B*) (*b*) lines, and fixes the mouths of the tubes on to the frontal uterine wall. It is performed through the vagina. This is an advantage in one respect, as women are generally less afraid of vaginal than of abdominal operations, and react more easily. But, I should be inclined to wonder whether the re-establishment of fertility would not meet with great difficulties in view of adhesions. I fear this would be the case, although I am of opinion that relaparotomy is still possible in these operations.* And the

* *Pfeilsticker* realized himself that this method was not free from objections, as may be seen from the fact that, a few years later, he initiated a method of extraperitoneal fixation of the narrower uterine extremity of the oviduct, which is less mobile and less subject to adhesions than the fringed mouth.

The operation is performed through the vagina, on principle, and involves the anterior vaginal vault and takes half an hour, necessitating five to

same is true, as I believe, of the last operation of this category. (I make no claim to be exhaustive on the subject.) The operation I refer to is *Stoeckel's*[266] inguinal encapsulation of the intact tube, already mentioned in the preceding chapter. I saw this operation performed, in *Littauer's* clinic, by *Stoeckel's* former assistant, *Hirschberg*, and was delighted with its ingenuity and elegance.*

There remains for consideration the operation by *Schweitzer*[267] which would come under category (*B*) (*a*). *Schweitzer* was a predecessor of *Littauer*—(to whom, however, his operation was unknown). In this method there is *an intraperitoneal implantation* of the abdominal extremity of the oviduct, which is lifted forwards through slits in the ligamentum latum.

The drawback of all tubal displacements and implantations is that these extremely fragile organs suffer in their vascular function, through displacement, and through the unavoidable manipulations and extrications, necessary in order to alter their position. And that, when they have been elsewhere embedded, malformations and adhesions, both in the oviducts themselves and involving the adjacent surfaces, may occur, which occlude the tubes permanently. Also, they may easily be subject to renewed injuries during reimplantation or release, as this is by no means simple.

Therefore, the operations under category (*B*) cannot meet

six days in hospital. The oviduct is separated from the uterine cornua by means of a parallel flat incision of between 1 and 1½ cm. in length. The uterine edges are then folded inwards and closed with three sutures. Then, in the angle between the tube and the ligamentum rotundum, a slit of barely a centimetre is made in the peritoneal membrane, and the severed extremity of the oviduct slipped through it and fixed, by means of two or three of the finest stitches, by overcasting of the severed edges and final superficial attachment of the tubal peritoneum, at a point to be chosen by the operator. There is no ligature! And the loss of blood is really negligible. (Quoted from the account in the *Zentralblatt für Gynäkologie*, 1928, No. 9.)

There is no doubt that this particular operation has its merits for purposes of sterilization. But it can hardly be maintained that the relaparotomy—(which would be on the lines of that of *Sellheim*, discussed in Chapter VIII. and depicted on Fig. 2 of Plate IX.)—could meet the requirement of simplicity.

* If I am not mistaken, the possible patency of the tube, after this operation, has been demonstrated by a failure. If such may be the result of the *accidental emergence* of the mouth of the tube, it would be equally possible, if the oviduct were purposely restored to its place.

our initial requirements (2) and (3).* Nevertheless, the methods under (*B*) (*a*) are preferable to those under (*B*) (*b*) as, in cases of intraperitoneal implantation, there is less probability of injurious adhesions than in encapsulation outside the abdominal cavity.

These considerations led me, from the beginning of my attention, to the problem of temporary surgical sterilization, to *concentrate on the ovaries*. " For these organs are certainly able to bear more interference without loss of function; their relatively great tendency to the extrusion of ova, the incessant repeated growth of follicles out of their interior, their moderate inclination to adhere, and the slighter danger of malformation in their functional surfaces, are all favourable factors in this sense.

" Nevertheless, we should exercise the greatest care, when we attempt so to *envelop* or *encapsulate* the ovaries, that the extruded ova cannot pass into the tubes—both in order that the organs may be released again as easily as possible, and that they may not suffer any injuries in, or owing to, their incarceration. Nor should they in any way hurt nor irk their possessor, through their removal to an unaccustomed area. Therefore, we must *arrange for them to have adequate room in their new home; for the circulation of blood through them to be unconstricted and undeflected; and not only must the reproductive epithelial tissue of their surfaces be free from any wounds, but it must not be brought into contact with either raw surfaces or connective tissue.* † Moreover, the organs must be placed where they are not exposed to any tension or to any painful or injurious pressure.

" My two first attempts did not meet these requirements. The first was carried out in 1905; the ovaries were implanted in the groin, following the *Goldspohn* extension of *Alexander Adams'* operation. This was followed by pain in the ovaries, especially on pressure. The second attempt was in 1907, and was more favourable. The ovaries were enveloped in the wide ligamenta lata, by means of incisions just below

* See above paragraphs 10 and 11 of the present chapter.
† Italics in the English edition.

the organs, in the posterior peritoneal lamella. Nevertheless, I was not satisfied, as I considered—and still consider—that there is far too great risk in the encapsulation of the specific epithelial ovarian surfaces in connective tissue." *

Both of these attempts were on the (*A*) (*b*) principle. The latter was recommended by *Bucura*[268] in 1910, and the first by *Gutbrod*[269] in 1921.

I was thus induced to operate on the principle enunciated under (*A*) (*a*).

I have already said what is necessary on the details. But I must mention the only other method devised on the same principle, namely, that of *Blumberg*,[270] who, in 1912, implanted the ovaries (bilaterally) in a closed peritoneal pouch formed out of a portion of the posterior surface of the ligamentum latum, which is folded, mantelwise, round the ovary and on to the rear surface of the uterus. The loose edges are then sutured to the uterine surface without any apertures. The tubes remain intact in the abdominal cavity. The ovaries have the possibility of motion in their loose pouch, as only the edges of the ligament are attached.

The restoration of the power to conceive—which can only be considered after some years have elapsed—would be effected by unfastening the sutures and leaving the organs free once more.

"There is, so to speak, no interference with ovaries or tubes. Only the ligamentum latum is affected, and thus there is the maximum possible guarantee that fertility can be restored to the full at some future date.

"The operation may be performed through either abdomen or vagina. *Blumberg* has always operated vaginally up to the present. In all the six cases operated there have been no pelvic complications, and the *menses* are normal." (Quoted from *Naujocks*.[254])

I should consider the advantages of *Blumberg's* operation, as compared with my own, to be twofold. When the encapsulation is unsutured, the ovary lies in its normal original position, and it is possible to operate vaginally.

* Quotation from my article published in 1920.[260]

But, as against these merits, I consider that my relevant case has proved that the *stationary* ovary is not a relatively significant factor, and that the vaginal operation, besides incontestable advantages, has the constant possibility of sepsis; which means the possibility of serious, unforeseen inflammations and adhesions.

My operation has also the merit of leaving the ovaries freer and in a larger space. So that, for instance, an unusually protuberant follicle, a corpus luteum or a dilation due to other causes, such as congestion, cannot burst open the envelope. And the special area of the posterior layer of the "broad bands" has not always enough available tissue to "wrap round" the ovaries. As a final objection, the abdominal membrane (peritoneum) is extremely tender and easily lacerated in and over the genitalia, so there is rather excessive risk that the sutures will not hold, either giving way at once, or later. This objection does not apply to the use of the vesico uterine fold, and the peritoneal membrane of the ligamenta rotunda, as in my operation. In the latter case the tissues may be caught up "double," and the sutures are thus made twice as secure.

These are the factors which make me prefer my device to *Blumberg's*. But I willingly admit that only experience can finally decide here. And it is easily understood that it is best to leave the special local conditions of each individual case to determine whether his method or mine should be preferred.

We must not omit an expression of opinion as to the possibility or advisability of volitionally alterable and temporary surgical sterilization in men. The subject reappears persistently, not in scientific and professional literature—although I once heard the suggestion made by a University professor, in a discussion on "Contraception" by a Medical Society—but in non-medical circles, who are interested in the technique of facultative sterility.

As a rule, the suggested method is to make an incision in the urethra, at the very base of the penis, where it joins the scrotum, so that a new orifice is formed and the anterior

portion of the urethra is no longer a conductor of semen. A frequently added recommendation is that it would be possible—by manual pressure on the anterior urethra, or by stoppage of the new orifice with the finger—to have the exact exit of the semen, literally "in one's own hands," and thus the choice of fertility or the reverse, in the coital act.

This suggestion is generally derived from the Mika operation of certain primitive peoples, which consisted in the slitting of the lower penile surface, that is, of the urethra up to the roots of the testicles, and was there completed by some tribes, with a final shorter transverse cut. Enthusiasts forget, however, that:

(1) The origins of this mutilation cannot in any way be connected with prevention of paternity, as it is found among tribes so primitive that they do not realize that coitus causes pregnancy.

(2) The effects of the Mika operation, as a method of birth control, can only be very slight. Otherwise, the tribes in question would very rapidly have exterminated themselves, as only five boys, at the most, out of every hundred are spared this ordeal.

And it must be evident to all, who have read and even partially assimilated my earlier chapters, that the alleged volitional and manual control of the ejaculation is almost entirely based on fantasy! Even granted that the whole of the seminal fluid were propelled through the artificial orifice, the vulva or its adjacent areas would, of course, be moistened thereby and, therefore, if no further precautions were taken, there would be a danger of undesired results.

If I also remind those interested of the damage which might arise from the constantly repeated contact of the urine with the scrotal membrane, and of the possibility of various undesirable psychological and mental reactions, I shall have made clear my disapproval of such a suggestion. I cannot be surprised that its advocates are always elderly men or women; and that I know of no case in which the operation was actually performed.

The circumstances would be altered to some degree were the artificially constructed orifice situated *behind* the scrotum. A suggestion to this effect was recently made to me by a veteran investigator of sexual problems—not himself a medical man. He gave an exact description of the technique which he had devised in theory, of the necessary instruments and so forth, and was enthusiastically propagandist on the subject. He expressed keen regret that he could not have had the operation performed on his own person while it could have been of benefit to him; it would have spared him years of trouble with contraceptives. . . . And I shared his regret, in so far as the experiment could probably have given illuminating and suggestive matter for thought. . . . But, could I regret it for *his* sake? Would not the disadvantages and unpleasantness he would have endured have exceeded those he had already experienced?

It must be admitted that an operation on the lines he suggested would mean far less likelihood of leakage of semen into the vulva than in the "anterior Mika operation." Even so, however, some further protection against the spermatozoä would not be superfluous. And there are extreme objections to the whole procedure: the operation itself would be complicated, as may be fully visualized by examining any good anatomical chart of the male organs and adjacent area; the wounds would have difficulty in healing; the liability to fistula would be great; very fragile and sensitive apertures and organs would be opened up and exposed to the possible invasion of putrefactive and pathogenic organisms; it would be difficult to avoid moistening the posterior scrotal surface during urination; there would be risk of eczema, and so forth. No! I would not advise anyone to make the experiment!

But, if any man not only suggests or advocates this operation, but ventures to undergo it himself: both he and the operating surgeon will do us a favour if they will exactly relate and communicate their experiences.

If I am asked to recapitulate the results of this and the preceding chapters—dealing with surgical sterilization—for

the benefit of those readers who either cannot or will not study them in detail, I will say :

The problem of surgical sterilization in men, for the purpose of preventing progeny in marriage, is not yet ripe for discussion. We have not enough recorded observations to form a basis for judgment. The significance of the subject demands the increased attention of both clinicians and research workers.

More attention than has hitherto been given should also be devoted to the surgical sterilization of women ; especially married couples should realize its possibilities. Where there are as many children as the parents desire, and, at the same time, cogent reasons for avoiding further increase, it is advisable to consider seriously whether current contraceptives, which are all associated with some unavoidable drawbacks, could not, with advantage, be replaced by surgery.

The disadvantages of surgical sterilization are restricted to the operation itself—and the days immediately following. Therefore, they are of brief duration. Later complications are excluded, if operation and conditions have been normal and successful or, at least, are extremely unlikely. They are especially unlikely if a method has been chosen which makes the restoration of power to conceive still possible by means of a relatively simple relaparotomy. This possibility should not be forgotten in order to avoid depressive psychoses.

The special methods of *temporary* sterilization have no disadvantages compared with the permanent methods. Thus, the former should be preferred both on general principles, and because external circumstances may change so far as to make another pregnancy both desired and desirable.

If a physician is obliged to terminate an already established pregnancy because of serious illness, the recurrence of that condition in the near future should, of course, be prevented. If the woman in question has as many children as she wants or if her illness is of such a kind that she must face the need for protracted or permanent sterility,

the surgical attainment of sterility should be emphatically recommended on the ground stated above. Obviously, both the doctor, the patient, and her husband will desire a combined operation in such cases. But the preliminary uterine evacuation will necessitate a smaller choice of possible methods.

Not only for this reason, therefore, but also in order to avoid the need for terminating an already existent pregnancy, it is far preferable to undergo surgical sterilization immediately, as soon as absolute contraception is indicated, *i.e.*, before impregnation has again occurred. It is then advisable to carry out sterilization as an independent operation. The most appropriate procedures in such cases are the inguinal encapsulation of the oviducts, and certain vaginal operations, which are the least complicated and exhausting.

A further favourable occasion for temporary surgical sterilization arises if abdominal section must be undergone for other reasons. In such circumstances the possibilities of surgical sterilization should always be considered, if there are as many children as the parents desire, and if the married couple has already decided on prevention.

In these circumstances surgical sterilization deserves consideration, even as an independent measure—especially if executed in a manner admitting of restoration of function—if the current contraceptive methods cause special difficulties or distaste.

CHAPTER XVII

TEMPORARY STERILIZATION THROUGH BIOCHEMICAL METHODS

I HAVE already often had occasion to mention the absorption of seminal substances by the feminine organism, and have, on various occasions, referred to the favourable and stimulating effects of these substances on many vital processes. The changes in young women as brides and during the first years of their married life have always arrested the attention of their neighbours. These changes are both bodily and mental, and have always been associated, in public opinion, with the absorption and assimilation of semen ; and many homely proverbs testify to this belief.

And the reverse truth has also been known long before it could be scientifically explained : namely, that an excessive supply of that nutritive stimulant causes defensive reactions in the woman's organism ; and these reactions generally manifest themselves as sterility. The infertility of women who engaged habitually or immoderately in coitus was attributed to this excess, partly unjustly, no doubt, but partly with absolute truth. The saying already quoted : " On a well trodden way there grows no grass " has certainly considerable basis in fact.

We have only been able to form an idea of the exact—or possible—processes involved in such cases of auto-immunization since we learnt of the formation of anti-toxins against albuminous substances introduced into the body, by parenteral rather than the normal channel—absorption through the alimentary tract, stomach and intestines.

If we limit our consideration to the special substances with which we are here concerned, we find that *Metchnikoff*,[271] *Landsteiner*,[272] and other investigators [273-275] subsequently showed that subcutaneous or intravenous

injections—that is parenteral injections of seminal fluid into the bodies of female animals were followed by the appearance of certain constituents in their blood which destroyed spermatozoa.

Dittler [276] injected the semen of rabbits into females of the same species, and produced temporary infertility in every case tested. Between 2 and 5 cubic centimètres of fresh seminal fluid were injected into one of the veins of the ear. Very shortly afterwards, on bringing the serum of the doe-rabbit so treated into contact with spermatozoa under the microscope, it could be seen that the sperms lost their motility, agglutinated (or " stuck together ") and then disappeared. After a few injections the doe-rabbits were infertile ; and they remained so four months. But, the most significant point in the whole experiment—*the ovaries continued to function and form Graafian follicles undisturbed.* The accuracy of *Dittler's* results has been confirmed by other workers in his field. *MacCartner* [277] was able to immunize *rats* against conception, through injecting the semen of their own species, for a length of time not exceeding twenty-two weeks at the most. He considered the cause of this sterility to be the development of a spermatoxic (specific poison to semen) substance within the womb and vagina, which special toxin then agglutinated or coagulated the sperms ejaculated in coitus. *Norman Haire,* [278] who has adapted this treatment for human beings, and used it, gives an account of the immunizing process. He says that in most of his cases the semen of the husband was used but, in some instances, of the husband's illness, semen was obtained from another man who was healthy, by means of masturbation and was received in a sterilized glass vessel at blood temperature. It was then covered over and let stand until all viscosity had vanished and the liquid was quite clear. Then it was mixed with sterilized water, at a proportion of 1 (semen) to 100 (water) and the dilution was brought to the boil in a steamer and kept at boiling point for five minutes. A drop of this diluted liquid was then injected into the woman, subcutaneously, and repeated at weekly intervals, the dosage being raised by one drop more on every successive occasion

The treatment consisted of twelve injections. None of the women under treatment became pregnant whilst receiving injections. But, with three of them, conception occurred some weeks after the injections ceased.

Russian doctors, especially *Naiditsch*, have experimented further on these lines and obtained some definite results. *Hodann* gave various particulars at the " Medical Course on Contraception " [279] held in Berlin in December, 1928, and the gist of the results is as follows :

" In order to immunize women against spermatozoä, it is not, by any means, indispensable to use semen of our own species. It is possible to use semen from bulls with success, for the ' antibodies ' formed in the organism after injection (the spermatotoxins and spermatolysins) are not limited in their operation to one *species*. And either living or dead (motile or stagnant) sperms may be injected subcutaneously. Therefore, the stagnant are generally preferred. In order to obtain temporary sterility in a woman with stagnant spermatozoä of another species, between eight and ten injections are necessary, spaced out over the period of a month. The emulsion injected by *Naiditsch* contains 500 million spermatozoä per cubic centimètre ; it was protected against bacteria by an admixture of formalin. The injections were made twice weekly. The dosages were small at first and gradually increased. As a rule there was only a slight clinical reaction to the first dose. After the third, most women complained of ague and rise of temperature—feverish symptoms—on the day of injection. And there were occasional local symptoms. But these symptoms, general and local, generally subsided soon. In a considerable proportion of cases, women complained of pain at the area of injection. Two women developed *herpes* of the labia after the second injection. Four complained of nausea. If feverish or other cautionary symptoms appeared after an injection, the next dosage was reduced by a half or a third and gradually heightened again in the following treatments."

This treatment was tested with thirty women who each had from six to ten injections. Most of them had the full number—ten. The results are, briefly, as follows: four

pregnancies during treatment; two "failures," and the remaining twenty-four women were effectually sterile for periods varying between two and a half months to over one year.

I need hardly stress the great interest of these methods and results. It is evident that a practicable and successful general result through biochemistry would be of the greatest benefit to all. The great advantage of this particular spermatic immunization—as compared with both the endocrine injections, which we shall consider in the course of this chapter and the radiotherapy with which we deal in Chapter XVIII.—is that it operates without disturbing the normal physiological processes which are basically important for the whole physical and mental personality, and well-being of women: that is, the regular course of ovulation and menstruation continues unchecked.

Thus spermatic immunization would indeed be an ideal method—if it only gave practical and dependable results!

But, any careful consideration of the reports summarized above leads to the conclusion that such is *not* the case. Will it be possible to develop and perfect the treatment sufficiently to guarantee both an adequate duration and an adequate innocuousness in other respects? "A consummation devoutly to be wished for" but not, I think, a very likely one.

The process, as tried and described, is essentially an *inoculation:* and, as such, its effects are limited in duration, for the antitoxins are absorbed and dispersed as in other similar processes against bacterial infections. Therefore, there must be—and relatively soon—another protective injection, which is not only unpleasant, but brings cumulative reactions such as are indicated in *Hodann's* report. . . . However, I will not indulge in prophecy, but repeat that *the method of inducing temporary sterility by means of immunization against spermatozoa has great merits, but cannot, as* YET, *be considered in practice, owing to its uncertainty.*

Not only *active immunity* but also *passive immunity* against spermatozoa, has been the object of experiments. In other words, injection with *sera* has been tested as

well as direct inoculation. This injection implies the use of serum from an animal immunized by inoculation, into other creatures, human and animal. I wish to record that these experiments have been made, although the accounts of the relevant tests by *Tuschnoff*,[280] which I have found in *Nemiloff's* [281] book, are not very clear and I have been unable to find further material on the matter. A practicable result is unlikely, for *passive immunity* will certainly not be more prolonged than *active*, and repeated injections with serum are certainly far more unfavourable to a woman's body than repeated inoculations.

Finally, there is an interesting variation on serum treatment of another kind. It is also due to a Russian investigator: *Chudarkovski.*[282] A male dog was treated with certain portions of embryonic rabbit and his serum was injected into a doe-rabbit. It was found that the antitoxins contained in the serum caused inability to conceive for a short period of time. This short duration of immunity, which was emphatically stressed, makes the method quite unsuited for regular employment on human beings.

The so-called "hormonic" * sterilization of the feminine organism is based upon a different principle. And let us realize at once that this principle is far less suited to practical use than that of spermatic immunization, as described in our preceding pages.[283]

In the second section of the present book, we have already explained that the absorption of certain chemical substances by a definitely restrictive diet may diminish the function of the ovaries, and that the consequent infertility will disappear—if the inhibiting treatment has not lasted too long. —when the cause, *i.e., the habitual nutrition,* is changed. For example, we have learnt that either under-feeding or over-feeding with certain types of food may cause sterility.

* The term "hormones" is often used to-day. Hormones are the secretions—poured into the blood and not discharged exteriorly to the organism—of certain structures in the human body (pituitary, pineal, thymus, thyroid, adrenal, etc.) which act like glands. These are known as the endocrine glands, or glands of internal secretion.

The ancient Greeks and Romans had become aware that fertilization was hindered and frustrated by a long course of extract of willow bark, which contains salicylic acid. Experiments since then have proved that certain compounds of *iodine* may produce temporary infertility. Female mice, whose food has been tinctured with iodine, cannot be made pregnant by normally fed males of their species. Conversely, male mice, whose food has been similarly treated, cannot impregnate normally fed females. If either sex is put on normal diet again its reproductive power returns in the course of a few weeks.

The experimental observations and results which lead to the systematic hormonic limitation of fertility, are analogous to the tests with mice. But there is this significant difference: *in the animal experimentation a substance was used which is not produced in their own bodies; in hormonic sterilization, the only substances used are such as are normally present, not only in the human metabolism, but also in that of those animals most closely related to us.*

The foundations for hormonic sterilization of the feminine organism were laid in 1919, through the experiments and investigations of *Haberlandt.*[284]

Every innovation has had its adumbrators, if not predecessors; so here too. *Herrmann* and *Stein,*[285] as well as *Bucura,*[286] had already recorded a temporary acceleration in the formation of Graafian follicles, after the subcutaneous injection of luteal extracts, *i.e.*, of strong specific ovarian stimulants. This acceleration was then followed by a *retardation. Pearl* and *Surface* [287] had observed that normal hens ceased to lay eggs if they were treated with extracts of the corpus luteum.

In " Ideal Marriage " * there is a detailed description of the manner in which the corpus luteum holds up or inhibits the growth of the Graafian follicles, that is, of the new ova, which can only ripen and be extruded when the corpus luteum is dispersed. (The whole organic cycle is diagrammatically shown on Plate V. of " Ideal Marriage.") If

* *Op. cit.*, Chapter V., pp. 84–85, and Chapter VI., pp. 86–114.

fertilization has occurred, the corpus luteum, instead of dispersing, grows and functions and inhibits the maturation and extrusion of a fresh ovum. We may even suggest that the corpus luteum is a sort of natural mechanism causing a temporary sterilization of the already pregnant woman. Thus, it is not surprising that *Haberlandt* experimented by the removal and regrafting of the ovaries of pregnant rabbits and guinea pigs, into females of the same species, who had not conceived. The effect on the non-pregnant animal was a distinct retardation of ovulation, and a temporary barrenness, which must be attributed to *endocrine* or *hormonic* factors. In both species, some of the tests had positive, as well as negative, results. After the grafted ovarian tissue had been absorbed and assimilated into the bodies of the animals, they were again allowed to pair with males and brought forth living and healthy young, who developed in a perfectly normal manner.

Among the test rabbits the period of hormonic barrenness was between six weeks to two months. Within this period, they were covered by the males from fourteen to twenty-one times, in all cases, fruitlessly.

Haberlandt extended and developed these experiments in transplanting tissue. He tested the rabbits with daily injections, during periods of time varying from *two to four and a half weeks*, from extracts of the ovaries of cows in calf. In these cases too, the formation of ova was so much affected that the rabbits remained sterile for some time. Examination of their ovaries showed none of the large ripe protuberant follicles, which contain ova apt for fertilization. *Fellner* [288] and *Herrmann* [289] have ascertained that there are essential substances promoting uterine growth in the *placenta*, as well as the corpus luteum. Therefore, it was obviously probable that the placenta also could furnish sedatives to ovulation. And, in fact, *Haberlandt* had as much success in sterilizing his animals by subcutaneous injections with substances obtained from the placenta, as in his former experiments with the ovarian extract from gravid cows.

From injection to feeding with corresponding substances was an easy transition. He began with white mice, mixing

their food with ovarialoptones and placentaroptones—(such are the technical terms for these biochemical substances). For a period of from one to two months, the mice were given these substances daily in the milk they drank. At the end of the period of special diet they were given the opportunity to conceive. Their resultant hormonic barrenness was clear proof that diet may be as effective as injection. The mice had either become permanently sterile, or were temporarily barren for periods varying from two and a half months to the minimum of *one* month.

Haberlandt is convinced that his methods may be of great value for the optional sterility of women. In his own words: " for birth control in human beings, in cases of disease and in the interests of eugenics."

Many medical men do not share his view, and I must confess that I am very sceptical on this point; even should it be possible, in the words of *Rübsamen* [290]: " to extract and isolate the active principle of the corpus luteum without at the same time, extracting amounts of albumen which might affect the results." * For there is a great gulf between *Haberlandt's* results, obtained on rabbits, guinea pigs and white mice—where his tests were not successful in all his cases, be it noted, and obtained through relatively enormous dosages with hormonic extracts—and the prospects of any similar treatment in human beings. The interactions between general health and well-being, and the central functions of ovulation and menstruation in women, are much more complex than the organic processes of animals. In a few cases *Rübsamen* caused human sterility by dosage with his luteal extract; but—as was indeed to be expected—the sterility was associated with suppression of the menstrual function (amenorrhœa). In my opinion, a method which produces sterility by such drastic interference with the ovaries that amenorrhœa results, is so injurious—for *this* reason alone—that it stands self-condemned. Consider its repercussions on the general bodily, mental and emotional life of the women so treated. Of course, there are various

* Since these words, five years have elapsed, and *Rübsamen* has published no further reports on his researches.

causes of amenorrhœa; the menses may be suppressed owing to insufficiency of the corpus luteum, as well as—in these cases—owing to its *excess*. And the essential constituents of the corpus have undoubtedly a favourable and stimulating effect on the feminine organism. This may be freely admitted; but there are great differences between such effects in the course of the normal cyclic rhythms and in normal physiological amounts, on the one hand, and in abnormal quantities—(for *Rübsamen* expressly states that his animal test results were obtained by means of very high over-dosage of his luteal extract)—and during long periods of time, on the other. *During long periods of time*, for, if volitional sterility is aimed at, it will be aimed at for longer than a couple of months in succession.

I consider *Haberlandt's* investigations of high scientific interest and value; but I venture to hope that they will not lead to the practical results he desires. For, if it were possible by the mere application of his method, to summon hormonic sterility, many women would not refuse the opportunity of such relief; *but, thereby, they would expose themselves to grave injuries*. I allude to purely medical injuries without any social or ethical implications.

For the moment, however, there is no such prospect. *Haberlandt's* method is not ready for practical application. But, if it should become ready and available, I would suggest that there would still remain the following arguments against it, in addition to the grave dangers to general health:

(1) Its uncertainty,

(2) Its indefinite duration in point of time,

(3) The probability, in *Littauer's* [292] words, that "The assimilation of these substances causes diminished desire, or even repugnance to sexual congress, as was shown in the test animals.* This result is not always likely to appeal either to our women patients or to their husbands."

* *Haberlandt* administered stupendously high dosages of Lutein extracts; *e.g.*, within twenty-five days, 100 phials; within fifteen days, 60 phials; and within thirteen days, 80 phials. He produced the following effects: the doe rabbits resisted the approaches of the males; they drew their hind legs together and made attempts at flight, uttering shrill cries; they could not be covered, and all their ovarian follicles, both ripe and immature, had atrophied (*Greil* [291]). *I* have added this quotation to *Littauer's*.

There have been variations on these experiments, demonstrating a close connection and collaboration between the ovarian hormones and those of the pancreas or spleen. *Vogt* [293] made use of this interaction, when he sterilized female animals by means of insulin. (Insulin is a substance obtained from the cells of the pancreas, which has been very successfully used for some time in cases of diabetes.) *Vogt* found that doe rabbits, after having been injected for four weeks with insulin, refused all intercourse with the males of their species. If the dosage were shorter, lasting only a fortnight, the females would mate, but did not conceive. These experiments clearly show that typically hormonic sterility may be produced, not only by injecting endocrine products from the gonads of pregnant animals, but also by similar treatment with *non-specific endocrine secretions; i.e.*, with such as are common to both sexes, as in the cases just cited, with the pancreatic hormones.

We need not emphasize anew the great influence of the hormone produced by the *frontal pituitary lobe* in this connection, having already repeatedly emphasized its key position in sexual reproductive functions. (See Chapter IV. and Appendix, and Chapter VII.)

The most recent investigations into the biological activities of the sexual endocrines have indicated further possibilities of solving the problem of hormonic sterilization. Both the testicles or male gonads, and the ovaries or female gonads, secrete substances which they pour into the blood stream, and which are, respectively, necessary for the evolution and preservation of the distinctive masculine or feminine characteristics—in the fullest sense of the word.* These endocrine secretions are always present in human blood, but in varying amounts, according to varying conditions. *Steinach* and *Kun* [294] have shown that they are sex distinctive or specifically sexual; that is to say, the orchitic or testicular hormone only favours and accentuates male

* These specific endocrines are manufactured and secreted by the gonads themselves. But their production and their effects are largely dominated in both sexes by the influence of the substances contributed to the blood stream by the anterior lobe of the hypophysis or pituitary gland.

characteristics, and the ovarian hormone only female characteristics. If a biologically definitely limited amount of the specific sex hormone of one sex is injected into a member of the opposite sex, it is possible to demonstrate by graded and regulated experiments, that ovarian hormones inhibit and suppress normal male development, and orchitic hormones inhibit and suppress normal female development. After the tests and researches of *Steinach*, *Laqueur* [295] and *Reiprich*, [296] we may confidently assume the existence of a specifically antagonistic or contrary effect, of each respective sexual hormone, on the *heterologous* or opposite sexual qualities and idiosyncrasies. *Steinach* and *Laqueur* have proved that, after injections with concentrated ovarian hormones, there ensues a marked arrest of growth in the whole genital apparatus of the male: that is to say, in testicles, prostate gland, vesicles and penis. *Reiprich* has proved similar processes to take place in the immature testicles of the *fœtus*, or unborn child; while the boy child is still in the womb, its blood stream is connected with that of the mother and, therefore, receives a strong admixture of ovarian hormone, and, consequently, the testicles remain very under-developed and rudimentary. And *Fels* [297] made further experimental confirmation by injecting into male animals serum derived from pregnant women, for, during pregnancy, the specific ovarian hormone is present in the blood stream in unusually large amounts.

From this mutual antagonism of the two specific hormones of the gonads, we may draw extremely illuminating conclusions. If we can succeed in artificially compounding the distinctive *orchitic* or male hormone, we shall necessarily be able to inhibit the reproductive activity of the ovaries by injecting it, thus making the feminine organism sterile by typical hormonic or *heterologous* dosages.

Vice versâ, we should be able to inhibit the reproductive function of the male gonads by injecting the typical ovarian hormone.

These possibilities are of the highest significance; but, for the *present practice* of medicine, they have no value as

methods of volitional sterilization. The inextricable disadvantages, damages and even dangers which such a drastic and fundamental dislocation and retuning of the whole body and brain would involve, must entirely outweigh the benefits which might accrue: for these benefits would be very problematical, as the effects of hormonic saturation are incalculable.

To sum up: Biochemical methods for the production of temporary sterility have, so far, no *practical* importance.

In so far as this is the case with the so-called *hormonic* methods, it is to be *hoped* that they will not attain *practical* importance, as the resultant disadvantages would outweigh their merits.

And, as regards treatment by *immunization*—which would have more benefits than defects—it is to be *feared* that it will prove unadaptable to clinical practice.

CHAPTER XVIII.

STERILIZATION BY RADIOTHERAPY

STERILIZATION, both permanent and temporary, may also be effected by the action of X rays (or Röntgen treatment) on the ovaries.* This effect is produced in the same manner as hormonic infertility, that is to say, by the *retardation or absolute cessation of ovulation.* The rays have a specific action on the reproductive epithelial cells of the ovary; these cells, as we have seen, are very susceptible to physical and chemical influences.† The Röntgen rays make the formation of ripe Graafian follicles and functional ova impossible. Similar results may be obtained by treatment with the rays of radium and mesothorium, which are closely allied to the Röntgen rays in certain respects.

Permanent and complete sterility is obtained by Röntgenization of the ovaries at a dosage of 35 per cent. of that needed to produce lesions of the epidermis. The exact technical significance of these terms is here irrelevant.

This intensity of radiation annihilates the special reproductive function of the ovaries. That is, it stops the further evolution of follicles. But there are other repercussions. Not only does menstruation cease, but there is an ebb, almost a cessation, of the *endocrine* activities of the ovary as well. This important unbalance of metabolism leads to other disturbances in the whole complicated interplay of the remaining endocrine glands.

There follows a special and unmistakable series of symptoms, bodily and mental, strongly resembling those of the natural climacteric, or change of life.

We term the therapeutic treatment causing permanent

* At the end of this chapter there is mention of the effect of Röntgen rays on the male gonads.

† See also Appendix I. to Chapters VII. and VIII.—(Tr.'s Note.)

sterility by radiation, *Röntgen castration.* The resultant *unphysiological* or *abnormal* bodily and psychological changes, in the woman's personality are termed *climacterium præcox,* or premature change of life.

The dosage of radiation may, however, be less than the castration dosage ; this applies to both Röntgen and radium therapy. There follows, then, a temporary inhibition of ovarian activity. The physiological mechanism in such cases is based upon the varying susceptibility of Graafian follicles in varying stages of growth, to both Röntgen and radium rays. The more Graafian follicles are destroyed by radiation, the longer are the *menses* suppressed, and the longer is the woman sterile.

Thus we are able, *within certain limits,* to regulate the period of infertility by regulating the amount of radiation, both in duration of treatment and intensity of dosage. But, at the present time, we are *only absolutely certain* of the amount required for *final castration.* Exact and safe *norms* for various periods of temporary sterility, have not yet been definitely ascertained.

It is necessary to emphasize all these points. Röntgen sterilization is by no means a harmless and easy expedient. The danger of such irretrievable damage, as, for example, an unintentional and undesired final castration, may be very much greater than the prospect of success.

We will not here deal further with the mechanism and technique of Röntgenization. The technique has been fully mastered and is adaptable to *ambulatory* treatment, that is, it involves neither hospital residence nor confinement to bed at home, and need not interfere with daily work for a livelihood. If the rays are adequately filtrated, and the danger of burns avoided, there is no intrinsic danger ; and the slight unpleasant symptoms which follow treatment in some persons are not serious, and soon pass off.

In 1903, *Albers-Schönberg* [800] discovered and recorded the especial action of Röntgen rays on the genital organs, during his experiments with *male* guinea pigs.

The first investigators to use radiotherapy for the sterilization of women were *Manfred Fraenkel* [298] and *Gauss*, [299] about 1911.

We must, however, realize that Röntgen rays have a far more drastic and durable effect on the generative tissue of the female organs than on that of the testicles. The action of Röntgenization on the male gonad has been carefully followed under the microscope, and we know that it is possible to restore the function of reproduction *up to a certain point.* But the ovary that has been heavily röntgenized is atrophied permanently. These differences correspond to the greater ovarian liability to injury through the absorption of chemicals and drugs. This special susceptibility is so marked that the ovaries may even suffer when other portions of the body have been exposed to the rays.

And if the castration dosage has been applied, the woman's potential fertility has been forever annihilated.

Röntgen castration appears, therefore, at first sight, to be an " ideal " method of ensuring feminine sterility. Women would certainly prefer it to the surgical methods, which involve so much comparative unpleasantness and trouble. In some women, moreover, it seems that individual sex manifestations, such as definite desire (libido), pleasure (voluptas) and final culmination (orgasm) are as little affected as after expert operative surgery. This second set of results are very strong arguments in favour of Röntgenization.

But, in actual practice, the individual results are far from being thus invariably happy. And all the incontestable advantages of this method are overshadowed by the extraordinarily depressing and displeasing symptoms of the artificial climacteric. These may be so extreme that they bring the whole subject of X radiation into discredit, and leave it appropriate for very exceptional cases and circumstances only.

We have dealt in detail in " Ideal Marriage " with the whole range of symptoms which can or do occur in the change of life.* *They are much more pronounced and pro-*

* *Op. cit.*, pp. 108–114, Chapter VI.

tracted after Röntgen castration than during the natural climacteric and menopause. This may easily be understood, for Röntgen castration befalls women in full sexual maturity, before the organism has been gradually attuned *to meet the loss of ovarian hormones;* whereas the natural change of life, with its ovarian *diminuendo*, occurs after the woman's bodily and mental functions have been, to some degree, adapted and prepared for it. Violent depressions, difficulties, and almost obsessions in the mental and emotional sphere, are especially pronounced after castration by X rays, and often of the most painful character. *Aschner*,[301] among other specialists, considers the psychic changes following Röntgen castration to be of the utmost significance, and, following a *questionnaire* circulated to psychiatrists, he found that psychoses as well as neuroses were frequently observed after this treatment.

The bodily changes, genital and general, resemble those of the normal climacteric, and are also varied according to individual constitutions. But even a youthful and vigorous physique is no guarantee to any woman against the premature involution of Röntgen castration. Atrophy of the upper genital tract and the vagina, loosening and shrivelling of the vulva and labia, excessive growth of hair on the face, obesity—are as frequently observed after Röntgen castration as in the normal menopause. And the artificially acquired symptoms are often much more pronounced, and correspondingly more deeply resented and deplored, than when they gradually develop as part of a gradual vital decline.

Therefore, Röntgen castration is an undesirable method of sterilization. It can only be considered appropriate in the case of women who are already approaching their change of life; or in whom there are grave *contra indications* to surgical sterilization—either because of the operation itself or of the necessary anæsthesia—while, on the other hand, they are unable to practise effective contraception. Röntgen castration suggests itself particularly in such cases, if there is special liability to hæmorrhages, which further exhaust an already weakened organism. But, in the group of cases we have just mentioned, there is seldom the urgent need

for sterilization without a simultaneous need for the therapeutic evacuation of the gravid uterus. And such termination of pregnancy, in itself, implies operative surgery. Therefore, Röntgen castration has not much practical significance; and, in my opinion, will never, in future, acquire it.

As has been mentioned, both *Manfred Fraenkel* and *Gauss* attempted a suppression of the *menses* for a *limited* time—practically amounting to temporary sterilization—through X-ray treatment, in 1911. *Beuttner* [302] had given the suggestion for such experimental treatment as early as 1897, several years before the work by *Albers-Schönberg* on the subject.

The theoretical basis of this procedure is the observed fact that the ovarian follicles, which contain the ova, have a widely different degree of sensitiveness to X rays, according to their own particular stage of growth. The riper, more elaborately evolved Graafian follicles are much the most susceptible and more easily damaged than the younger and the primordial follicles. If the ovaries receive a carefully limited X-ray dosage—well under the castration strength—the mature follicles are dispersed, and thus menstruation and possible conception are both delayed until the primordial follicles, which have survived the action of the milder dosage, have, in their turn, matured. Thus, we can sterilize women for a *limited time* by Röntgen rays. And the exact procedure is *technically* simple and easy to operate.

The following practical considerations are, however, powerful arguments against that temporary sterilization by X rays which, at first, appears so desirable a treatment.

(1) *It is not possible, when administering the dosage, to regulate the exact time when it becomes operative.* Therefore, up till this time—even after the radiation—the patient may possibly conceive.

(2) Moreover, in each individual case the precise *duration* of the amenorrhœa, and resultant infertility, cannot be ascertained in advance.

(3) A great danger to both woman and potential child is

always possible. For, when menstruation is re-established and pregnancy follows, both the maternal and the unborn organisms may be gravely harmed by the previous Röntgenization. We have observed both spontaneous miscarriages and the birth of children so injured in their earliest stages of growth, that they were positively deformed.

(4) The accessory symptoms of the amenorrhœa produced by Röntgenization may be so serious as to cancel and outweigh all good results hoped for, from the *general and genital repose* after treatment. This is especially the case in women already weakened by much ill-health.

(5) Among women there is a very wide range of variation, physical and psychological, in respect of the organs and functions of sex. As a result of the differences in the sensitiveness of the ovaries—and often in their actual position as well—in different individuals it is impossible *completely* to avoid occasional distressing accidents, by which, in spite of extreme care, the "temporary" dosage proves, in fact, a "castration" dosage, and destroys not only the potential motherhood but the sexual maturity of a young woman for all her remaining years.

These are objections of grave character. They obviously reduce the value of Röntgenization. We will consider the chief disadvantages in somewhat more detail.

As regards the *duration* of temporary sterility through Röntgenization, *Naujoks* [303] had to report appreciable failures. In six of his cases the sterility did not even last for a year, but only three, four or eight months. Such a comparatively brief ovarian *latency* is neither "good enough" for practical contraception, nor for the healing of such morbid conditions as tuberculosis, for which the method has been specially recommended. We have, unfortunately, up to the present time, no method of exact measurement of the reaction to dosages with X rays. *Therefore, we cannot systematize or standardize temporary Röntgen sterilization.* And even when the technique of radiation has progressed to mastery of the most minute and delicate *gradations*, we shall not have advanced much further in *practice*, for the

reason above-mentioned under (5). The great individual differences in ovarian susceptibility, and the considerable differences in exact ovarian position in the peritoneal cavity, as between woman and woman, will still baffle our efforts, for identical dosages will prove too much for one woman and too little for another. And there is an essential difference between the action of, *e.g.*, pharmaceutical drugs, however powerful, and the dosage with Röntgen rays on the human body. Drugs can be administered in lesser amounts, or at longer intervals, if their action appears unduly strong, and the organism generally excretes the superfluous amount (through skin and kidneys or bowels). But the Röntgen dosage *is not excreted;* the cells of the ovaries receive its effects, but do not *recover* from them; and *only after some time has elapsed are we able to tell whether the dosage was adequate or immoderate.* Then it is too late to change or cancel what has been done. Particularly is this the case if—as is usual—the total dosage prescribed has been administered *at one treatment,* or on rapidly following occasions at short intervals. *Manfred Fraenkel* [304] has suggested a series of treatments, *a gradual and cumulative saturation of the organism.* In these circumstances the risk of overdosage is certainly less, though still existent. And another danger appears: what of a possible impregnation during the period of treatment? Of course, this should have been guarded against in other ways; but suppose *it nevertheless happens*—whether owing to failures in contraceptive technique, or to an *imagined immunity?*—for it is easy for imagination to obey what instinct suggests. Whether an ovum, exposed to comparatively weak Röntgenization, be fertilized, or an already fertilized ovum be röntgenized; there follow damage, difficulty, conflict and tragedy on every side.

For it is impossible utterly to disprove the reproach most often hurled against temporary X-ray sterilization: the reproach of injury to the very stuff and substance of future lives.

Animal test experiments have long ago proved that

Röntgenization of the parents may damage normal development and faculties in the offspring. Research on the ova of echinoderms and frogs, on mice, rabbits and guinea pigs, has established the fact of deterioration in the product of conception.

We also know, beyond doubt, that the Röntgenization of women, who are already pregnant, can gravely injure the embryo and the unborn child.

What of possible damage owing to Röntgenization of reproductive cells, *previous to fertilization*? The answer depends on whether X-ray amenorrhea has been produced before the ovum from the ovary under treatment was fertilized—or not, as the case may be. *Nürnberger* [305] draws a distinction between *late fertilization*, by which he refers to X-ray amenorrhœa produced before the junction of ovum and sperm, and *early* fertilization, produced afterwards. According to *Martins*,[306] the danger to the product of conception is probably greater in the latter cases —in early fertilization. The radiological technique is comparatively recent, and there are not yet many recorded cases of results on human beings; but still there are a certain number, and both late and early fertilizations are definitely recorded in reports and publications. There is a strikingly large number of miscarriages. Further, there are accounts of various abnormalities, of which the chief are: congenital malformations, mongolism, and other constitutional defects including arrested growth. The opinions of specialists vary as regards the incidence of the risks involved. This is because the advocates of Röntgenization generally attribute the observed and recorded defects of offspring, born to women who have been röntgenized, to other causes than the X rays themselves. They point out that all these mothers were, more or less, ill, or they would not have been röntgenized; and they will not admit that the unequivocal results of many tests (on mammalia) are equally valid for human beings. But, in practice, even these fervent protagonists take account of this risk of injuries. Even *Nürnberger* recognizes the danger of phenotypical injury to the germ plasm, in cases of early fertilization. This means that where the profound

Röntgenization of the ovary has, nevertheless, been followed by pregnancy, *before the typical amenorrhœa-sterility had had time to develop*—there is a probability of injury to the child. On the suggestion of *Wintz*, it has been decided to forbid such patients to become pregnant over a period of four months after treatment, basing this advice on explanation of the probable danger to the children.[307] Thus, the need for avoiding injury to the germ plasm in *early fertilization* has been recognized. But a remarkable case, recorded by *Gummert* [308], has conspicuously shown that serious injury to the germ plasm is by no means impossible, after and owing to *late fertilization*, when the ovaries have been X-rayed. *Gummert* observed pronounced mongolism in a child whose mother had been röntgenized by him two years before the child was conceived. *Seynsche* [309] has also published convincing cases of similar grave defects in several children of two *men* who had been exposed to the action of Röntgen rays for years. These facts make the harm Röntgen rays can do to both germ plasm, and the living children who evolve therefrom, patent to all.

In my opinion, all things considered, *we are justified in warning against attempts to produce temporary sterility in women by exposure to Röntgen rays.**

Not only Röntgen rays but also the emanations of *radium* have been used to produce temporary infertility. *Pinkus* [312] first suggested this possibility in the year 1916. He observed that radium therapy of non-malignant uterine hæmorrhage, inhibited menstruation for some months, after which it was re-established in normal amount and frequency. By modification of the dosage, he was able to determine the duration of the resultant amenorrhœa to some extent. *Pinkus* was hereby encouraged to suggest temporary

* I allude here to Röntgenization *for the purpose of stopping the reproductive function over a limited period of time*. I do not refer to Röntgenization for the purpose of *alleviating or curing inflammations of the upper genital tract*, through artificial repose of the ovarian activities; for it was I, myself, who, having already recorded these beneficial results in 1915, [310] first suggested systematic treatment on these lines [311]. Unfortunately, I left the possibility of later conceptions out of account, first because I thought conception very unlikely, after previous bilateral salpingitis, and secondly, because I under-estimated the danger to the germ plasm at that date.

sterilization by means of radio-active substances. There followed communications and contributions from *Koblanck,* [313] *Kupferberg* [314] and *Schädel* [315]. The last mentioned could bring reports on the largest amount of material. He had treated 500 women, who suffered from non-malignant disease of the uterus, by insertion of tubes containing radium into the cavity of the womb. In eighty of these women there followed amenorrhœa with inability to conceive lasting from six months minimum to fifteen maximum. We are unable to say with certainty how this effect is produced by radium. *Schädel* attributes it to action on the endometrium—mucous membrane lining the uterus—which he believes to be destroyed and, as it were, *scorched* by the radium. *Naujoks, Gauss* and others are of opinion that the radio-active emanations act primarily on the endometrium, and secondarily on the ovaries. It is not yet certain which of these views is correct. But we do know that, with proper care, the injury to the *uterine mucosa* is only temporary, so that it would be quite possible to re-establish both menstruation and fertilization. But, is the effect on the ovaries *equally temporary*? If we could actually succeed in *equally distributing* the radio-activity throughout the uterine *mucosa,* by modifying the structure of the container tubes, and, at the same time, regulating the dosage, so that the ovaries remained quite unaffected; and if, in this manner, the radio-activity were concentrated on the cavity of the uterus, then we should have a method of preventing pregnancy by radium emanations entirely superior to the action of Röntgen rays, as previously described.

There are already undoubted advantages in radiotherapy. Radium dosage can be much more completely and minutely regulated than X rays. The resultant amenorrhœa can be more definitely limited and controlled. And the symptoms connected with this suppression of the menses are much milder than under Röntgenization: an enormous advantage. Nevertheless, the uterine mucosa have an important secretory office which cannot be suppressed without harming the woman's whole organism, as *Aschner* has already reminded

us with due emphasis. And there is the practical disadvantage that this radium treatment requires hospital or clinical residence and supervision. This is a disadvantage of expediency rather than of principle. There is, however, one serious *fundamental* objection to radiotherapy in these cases, for it involves interference with the *uterine cavity*. The peculiar disintegrative action on the *mucosa* means the possibility of rises of temperature and intrauterine infections. When I employed radium in intrauterine treatments (for other purposes than sterilization) I had repeated occasion to observe these unwelcome effects. My approval of radiotherapy for gynecological ailments is undiminished, but the accessory symptoms prevent me from recommending it as an agent in temporary sterilization; at least, until the technique has been so far perfected that these accessory symptoms can be excluded. This means, especially, until we are able to *distribute the radio-activity equally throughout the uterine cavity*. Whether such equal distribution is attainable must be left an open question, for the present.

There is another method of applying radium—by means of tiny tubes introduced into the vaginal vault or *posterior fornix*. This method aims less at uterine interference than at the disintegration of the ovarian follicles. It may be most helpful, in certain diseases; but I consider it quite unsuited for temporary sterilization, because of the danger to the germ plasm at a future date.

I have given the argument *pro* and *con*, in the matter of radiological sterilization. My conclusion is that, *until further investigations and improvements may be made, radio-activity cannot be recommended for the systematic production of sterility in women.*

And it may easily be deduced that the same is true, *mutatis mutandis*, for men. If the man under treatment has not been permanently sterilized, that is to say, castrated, there is always danger to his germ plasm. For the spermatozoä only disappear after obliteration of the germinal cells [316]; and the results of damaged sperm cells have

been disastrously revealed by the two cases of *Seynsche*, cited in our text.

But, on the other hand, Röntgen-castration in the male, while preventing damaged progeny, is, in itself, as *profound mutilation*, bodily and psychological, as in the female organism. Therefore, it is not a tolerable method of sterilization in either sex.

CHAPTER XIX

RECAPITULATION AND CONCLUSION

Author's view of the Problem of Artificial Termination of Pregnancy

TRANSLATED BY C. A. BANG

IF we look back on what has been discussed in this part, the first glance reveals a somewhat unsatisfactory state of affairs:

Not only have we had to reject much that appeared to give grounds for hope, but we have had to state that the very contraceptive methods, alleged to fulfil the ever-present desire for safety and harmlessness, without unpleasant after-effects, are absolutely useless. And we have had to term many methods, previously considered and guaranteed to be reliable, as unreliable, and indeed injurious.

Although, from a technical standpoint, individual Birth Control may appear a simple matter to the superficial observer, as is shown by the statistical results of prevention, nevertheless, the attentive onlooker sees what an enormous amount of unhappiness and damage to body and soul, owing to the employment of harmful and unreliable methods, is concealed behind these figures.

If we look more closely, however, we shall see certain bright patches in this gloomy picture. Here and there we have discovered possibilities of improvement in the present methods, thanks to further clinical research (operative methods, occlusion by diathermic cauterization of the uterine tubal openings under guidance of the eye, radium treatment of the mucous membrane of the uterus) and we have found out ways whereby (as a result of the perfection of the technical apparatus, mechanical and chemical expedients) the safety of certain processes is increased, and

their unpleasant effects minimized. But, above all, we have seen the mistakes that are responsible for much unhappiness and many catastrophes, how these may be avoided and how it is possible to neutralize them (particularly by a combination of various methods, the inadequacy of which in themselves is thus minimized).

Thus, if we examine the problem at close quarters, we see that at the moment the state of affairs is satisfactory to some extent, as far as technical possibilities are concerned, and we have the assurance that the position will be still further improved in the not far distant future.

Provided always, that not only *serious research* work is carried on, in order to improve present methods and to discover new ones, but that every married couple is able to obtain the medical advice and help which is absolutely essential, in choosing the most suitable methods and means of prevention for their special case, and in learning their correct application. *For each case is a special case*, in that the physical and mental peculiarities of a husband and wife make one method of treatment suitable for one couple and another for another. Thus the physician can recognize that a system which works well in one case will be unreliable and injurious in another.*

The physician only can judge what process or remedy is suitable in a particular case; and further, he must have made a special study of the problem here at issue, and must have the time to consider each case at leisure and in all its details.

First and foremost he must be thoroughly competent in gynæcological examination; for his diagnosis of the case depends, above all, on a correct knowledge and estimate of the peculiarities occurring in the sexual organs of the woman (whether normal or abnormal). But this is not all.

* The only process that can be considered as reliable and harmless without previous consultation with the physician (naturally only to be employed after taking what I have explained into account) is the combination of the condom with a contraceptive jelly. Having regard, however, to the fact that coitus with the condom is impossible for many people for any length of time, I believe medical advice and control to be necessary even in employing this process.

The physician who is consulted by a married couple about Birth Control must also possess the necessary psychological knowledge and insight. He requires this just as much in choosing the correct method of contraception for his patient as his gynæcological education and training. For a wrong choice in the method employed may cause greater mental than physical damage, both because it may facilitate or bring about neuroses and also because it may be responsible for the collapse of the marriage.

If the physician requires psychological knowledge and insight in the correct choice of a contraceptive, he requires these qualities to no less a degree in forming an opinion as to whether such means shall be employed at all.

This does not mean that he should set himself up as a judge of morals, nor that he is entitled to impose his own viewpoint and attitude to life on his patient! Such a thing should be unthinkable. Indeed, in order to prevent this, I should like to see those physicians who hold extreme points of view, debarred from giving advice in such matters, that is to say, those who are either fundamentally opposed to birth-control by contraceptive methods or who advocate unrestrained control. For neither the one nor the other is capable of considering objectively what must be done, having regard to the mental and physical condition of the married couple seeking their advice.

Although I believe that the physician who refuses to give advice in these matters should hold neither of these extreme points of view, I consider it to be just as wrong if (as only too often happens) the doctor consulted entirely disregards the main question just mentioned, whether contraceptive measures shall be employed at all, and confines himself entirely to giving advice regarding the method of contraception.

This, in my opinion, is wrong, because at the present time a very great number of married couples decide on contraception, without being aware of the significance, both physical and mental, of such a decision to themselves.

It is my conviction that the physician giving advice in

these matters must unquestionably carry out the following procedure.

He must, without frightening the married couple in any way and without moralizing, make clear the significance of the matter to them ; consider in conjunction with them if their fear of pregnancy is really justified (this often proves to be genuine fear of having a child), and if it would not promote their happiness more, if the forces of nature were allowed free play for the time being ; and to discuss with them if the facts in favour of the desired measures outweigh the disadvantages. It is clear that the physician gains an insight into the mental and physical attitude of the married couple by means of this preliminary discussion of the whole question, and that, further, many points are discovered that are of use in the consultation (if this takes place) on the special question—the choice of a preventive method.

In this I see a further advantage of the method of procedure recommended here, indeed laid down as essential, in consultations regarding birth control.

Anyone who thinks over all this will understand how much time such a consultation takes. Further, those physicians who know by experience how hard it is to form a correct judgment regarding the mental and physical factors at issue, or those laymen who have come to appreciate such difficulties by reading the previous chapters, will readily understand that the busy practising physician will be unable to find the time or the leisure adequately to prepare himself to overcome these difficulties.

This is of small moment to private patients. They, on the recommendation of the family doctor, will find their way to a gynæcologist who has psychological insight (undoubtedly the most important condition of such a consultation), special knowledge of the problems arising, and is bound neither by a point of view of " universal application," nor by any particular method.

There is an increasing number of such gynæcologists (although they are still too few), and, in my opinion, it will not be long before every gynæcological expert, in so far

as he is not prevented by his viewpoint and attitude to life, will consider it his duty to help his patients and their husbands in such matters in the manner described above.

If we reach this point and if, by such time, government and insurance officials have come to see that it is equally in the interests of the community as of individuals to appoint for this purpose an expert to give advice and help to those people who receive medical aid in public institutions, then the masses of the people will no longer be deprived of the assistance they so urgently need.

At present, however, there is very little of such help. *It is absolutely necessary that, somehow or other, as many clinics as possible should be established where physicians entirely conscious of their great responsibility in* every *respect, can give instruction and help to married couples regarding birth control.*

It is also urgently necessary that the physicians required should be prepared for their task by special course of study—*apart from the fact that it is essential that medical training should be so designed that* every *doctor should have an adequate knowledge of these problems.*

*Finally, it is highly desirable that the Universities should support objective research in this field as far as possible, and it is essential that the hospitals should afford opportunity without difficulties for (temporary) operative sterilization (which in my opinion should be taken into account far more in the future than it is to-day).**

These are the conclusions resulting from my exposition, and the practical demands arising from my experience and studies. Some will think they go too far, others not far enough. I cannot help this. I do not choose to follow

* The necessary expense entailed will undoubtedly prove to be far less than that caused at present in fighting disease and sickness occurring because such measures are not in force. It is to some extent unimportant whether these charges fall on the State, Boroughs, Health Insurance or similar institutions, for we are dealing here with savings and not with additional expenditure.

I only wish that officials would see how all this is associated with the measures taken or supported by them, and designed to give medical instruction and help in reasonable birth control.

those who would go further. To those who think I go too far I can only express my conviction that these demands will be satisfied at no far distant date, for they can *no longer* be denied.

In addition to practical measures, it is wise to make the following remarks regarding *instructional work: Married couples* must be impressed with the fact that children form an important part of human happiness, and that wrong limitation of births may sooner or later have most injurious effects, both mental and physical (I mean here—apart from the employment of harmful methods—first and foremost a diminution in the total birth-rate, and also the postponement of the birth of the first child).

Further, they should be told the advantages of reasonable birth control, and at the same time everything connected with contraception in such a way that they can *understand* the most essential points, for only thus can " catastrophes " be avoided. They will then realize the necessity (which should be particularly emphasized) of consulting the physician on all matters regarding the limitation of offspring, for he alone is capable (I repeat this because it is so important) of judging what is suitable in each particular case.

As far as physicians are concerned, everything should be done to make them consider it their mission to stand by their patients in these matters (unless they are prevented from this by religious precepts or their own attitude to life).

Too many physicians are still bound by outworn prejudices, and it is the duty of those who have insight to free them.

Officials should be informed that we desire to help birth control within reasonable limits, and that first and foremost contraception is a far more effective method of fighting abortion than any other measures or threats of punishment. They must also be shown that therefore it is just as much in the interest of the community at large, the State, as of the individual, to promote the rational employment of good contraceptive measures.

I might now conclude my remarks. But we have touched

on a question upon which I feel I must express an opinion. I have been asked by so many of my colleagues to give my views in regard to the artificial termination of pregnancy, that it would be lacking in courage, even if the problem does not form part of the subject-matter of this book, not to explain my attitude to this difficult and delicate question.

I am well aware that I shall disappoint those who may have hoped that I would agree with the basic principle expressed most pertinently in the title of the well-known book: "Your Body is your Own," by *Victor Marguerite.*[317]

"Your Body is your Own." Let us suppose (although much can be said against it) that this is true. In this case, the body of your child, even when it is growing in your body, and is deriving its nourishment from you, does not belong to you. It may be quite true that in ancient Rome the unborn child was considered to be part of the entrails (*pars viscerum*) of the mother, and this still holds good amongst certain peoples and in certain countries, but such civilizations were and are very different from ours, and with regard to the question here mentioned our civilization differs in two points:

First, they have a far lower opinion of the value of human life than we, and accordingly they allow one man to have wide powers of life and death over another.

Secondly, out of pure ignorance they have no conception of the "human qualities" of the embryo in the early stages of pregnancy.

I have attempted to find out why it is possible that so many people belonging to *our* civilization support the viewpoint contained in the sentence "Your Body is your Own" (thus allowing the woman to destroy the fœtus if she so desires). And I have come to the conclusion that the reason for this is not so much decreased reverence for human life, but a lack of knowledge that the life of the fœtus is actually that of a human being.

If we put aside all scientific, medical, religious and legal proofs, suppositions, considerations and speculations, and keep to the simple facts of practical life, I am of the opinion that the fact that the embryo, in the first months of his

intra-uterine life, is not considered as a human being, may be explained because people are not, or refuse to be, aware of its " humanity," which is expressed most strikingly in its likeness to mankind.

In this respect it is characteristic that physicians in general (there are exceptions to every rule) think far more strongly about the question of the artificial termination of pregnancy than laymen, because they have been familiar since their student days and in their practice with the human fœtus, and know the " human nature " of the unborn far better than those who are not physicians.

Perhaps still more characteristic is the fact that obstetricians who come into direct contact with these beings more than other doctors, hold the strictest views on the matter.

They far less frequently hold the " Your Body is your Own " point of view than other specialists, because doing so would logically make them responsible for condoning abortion. Other specialists, who are not themselves called upon to destroy the life of the fœtus, naturally think more of the injurious effects of pregnancy on their patients than of the life of that fœtus.

The tendency of leading gynæcologists to consider the operation as a purely surgical intervention in those cases where the artificial termination of pregnancy is necessary for medical reasons, and perform it in the same way as they would remove a tumour by means of abdominal incision, is highly significant—of course they have excellent surgical and medical reasons for this ; nevertheless, I think it probable that the choice of this method of operation is based on the unconscious or subconscious desire to avoid the terrible dismemberment of the fœtal body which has the appearance of a living human being. I, for my part, must confess that with the exception of dismembering operations on the mature child, I know of no medical process that is so painful to me as that of removing a living fœtus from the pregnant womb.

All a matter of feeling ?—most certainly. I have stated more than once that in such matters it is in the end always a question of one's attitude to life which is, after all, a matter of feeling : a matter of feeling among physicians and a

matter of feeling among laymen, first and foremost among women who are most nearly interested in these problems.

It is an astounding fact that the mother of this living being with her similarity to the child, arrogates to herself the right to kill the fœtus, and this can only be explained because she neither knows that it is a child nor that there is any question of killing. If this were not so, her feelings would break out with elementary force.

I hold it to be a powerful weapon in the campaign against abortion to do all that is possible to make men and women understand by the spoken and written word, by illustrations and lectures, that these ideas are not imaginary, but that in such an operation as indirect abortion, there is really a child, and there is really a killing of that child.

Again, and this should be strongly emphasized, it must always be recognized that every artificial termination of a pregnancy (unless in the very first days) involves a most important and injurious change in all the woman's processes of life which were attuned to the new function. Such a change—which is entirely different from the process of birth normally proceeding in the body or even from the previous death of the fœtus with the result of the process of transformation, that is leading to natural abortion—has a detrimental influence on the whole organism. Now that " scraping out " is the order of the day, it is essential that women should be aware of the considerable risk of general damage in such procedure, and further, that every artificial termination of pregnancy, however well and expertly it may be performed, involves the possibility of local injury with consecutive illness, chronic pains, permanent sterility.

I only wish that people would understand that such repeated warnings are not the exaggerations of pedantic physicians, but are the result of ordinary daily observation.

If the risks of correct artificial termination are already considerable, how much greater must be the direct and indirect dangers attached to abortions performed by bunglers! There is no need to go into this, for these dangers are well enough known, and no one defends such abortions. Unfortunately, on the other hand, there is quite

enough anguish and despair, also frivolity and irresponsibility, in the world.

There can be only one logical conclusion to what I have said : artificial termination of pregnancy is wrong and must be condemned. I do condemn it.

Does this mean that I have never, or will never again, perform the operation ? This would be going too far !

Circumstances and medical indications may arise which make it necessary to choose this evil to avoid a greater (death of the woman, blindness or other incurable damage).

The importance of the evil of artificial termination should nevertheless always be remembered and if a certain amount of evil is unavoidable the attempt should always be made to choose the least harmful course.*

These reflections have led me to make the following statement :

(1) If examination of a pregnant woman shows that it is impossible without termination of pregnancy to save her from death or serious irreparable damage to her health, the operation should be performed. If there is danger in such a case (and this is usually so), that another pregnancy would cause the same condition, temporary operative sterilization should be carried out before the patient is in a position again to conceive.

(2) In those cases in which it may be predicted almost certainly that pregnancy will seriously menace the life or health of the woman—and these cases are far more numerous than those in which such a danger occurs quite unexpectedly —that is to say in all cases where there is an absolute indication that pregnancy should be prevented, the husband and wife should be instructed by the physician to take strictly methodical steps to prevent pregnancy.

If the more certain operative method is not immediately chosen, the physician must give detailed instruction to the married couple how they should act and what they must and must not do. Further, the woman must be told that if

* I find myself here again in complete agreement with moral theology. See Appendix to this Chapter.

menstruation does not occur at the normal time she must inform the doctor on the second or, at latest, the third day after it is due. The physician should then proceed to a mild general cauterisation of the mucous membrane of the uterus, the method of treatment that was mentioned at the end of Chapter XIV. If this procedure has to be repeated the question of operative sterilization again arises and becomes more urgent.

It is possible that cauterization at such a time may not only destroy the superficial layer of the mucous membrane, but also an ovum in the process of development, that has imbedded itself there, thus terminating a very early pregnancy. It is equally possible that the ovum, although fertilized, was not imbedded and that the imbedding now is prevented by the cauterization. Finally, there will be cases in which no conception at all had taken place, but where menstruation did not occur for some other reason.

It is evident from what we have said regarding physiology, that in the first case termination has by no means the importance for the whole organism that it would have if pregnancy were some weeks advanced, the changes have not made much more progress than they had a few days previously, just before the date menstruation was due, so in this case there can be no more question of a sudden transformation in the condition than in the case of the " normal " death of the ovum taking place in conjunction with menstruation (as opposed to what takes place in forced termination at a later date).

From the mental aspect, too, the situation we are discussing is quite different from a later termination, both for the woman and her husband as well as for the physician. It is true that an artificial termination really takes place, but there is no question at this stage of a conscious killing of a being resembling man, all the more so as those participating are ignorant of the actual condition of things. In my opinion, it is better from a psychological point of view, *not* to attempt to

investigate the matter afterwards. This is, of course, possible if a thorough microscopical investigation of the small portions of matter dislodged by the menstrual hæmorrhage (apparently normal) is made.* As I have said, however, I believe it to be better to leave the matter in a state of uncertainty, at least for the first time. If the same thing happens again within a relatively short time, I think it unwise to continue to pursue the "ostrich" policy. If microscopical investigation then shows that fertilization has taken place, thus making it probable that this was also the case the first time, and if it is further seen that the contraceptive measures cannot be relied upon as far as the married couple in question are concerned, then, in my opinion (temporary) operative sterilization should most certainly be performed, for I cannot recommend many repetitions of the cauterization process. Not only would that decrease the reverence for human life, which I desire to be as great as possible, but also the method is not absolutely free from disadvantages and dangers, so I must again utter a warning against its irresponsible employment.

(3) In cases where contraception is not absolutely indicated (that is to say in any cases in which no real danger results from pregnancy) I hold that any intervention designed to terminate a pregnancy that has come about in spite of preventive measures is to be condemned. For this time the law of choosing the lesser before the greater evil applies to the mother and not to the fœtus. The body of your child belongs to itself. You dare not sacrifice it to your own body unless you are forced to do so because *serious* danger threatens your own life. Of course the physician will choose the (generally) more valuable life of the mother rather than that of the fœtus, which is just in the process of development. But just as he feels bound in the case to consider the

* If no hæmorrhage occurs, and provided it is certain that the cauterization has spread over the whole surface of the mucous membrane, it may be taken to indicate that the absence of menstruation was not due to fertilization, but to an irregularity of ovulation, and must therefore be ascribed to changes in the formation of the mucous membrane.

mother's right to live as greater, his conscience will compel him in cases where, on the one hand, it is a question of life itself (the fœtus) and on the other, merely of difficulties of life, to consider the latter of less importance.

To summarize the whole matter once more :

Artificial abortion is to be condemned, although it is unavoidable in certain cases in order to avert the greatest evil (death of the woman or irreparable damage to her health). If pregnancy has been absolutely forbidden an attempt should be made to prevent the imbedding of the fertilized ovum if contraceptive measures have failed. Even although an imbedded ovum is thus destroyed, such intervention is a lesser evil compared with artificial abortion (at a later stage).

The least evil is finally contraception (evil only in so far as it is associated with a certain amount of unpleasantness). By improving it and employing it rightly the greater and greatest evils can be avoided.

APPENDIX TO CHAPTER XIX

The Lesser Evil (or Sin) is preferable to the Greater. (From *A. Lehmkuhl. S. J. Theologia Moralis*, Editio XII., Vol. I. Numerus 799.

Consulere peccatum quodcumque, si absolute consulitor, numquam licet : verum aliquando licebit ei, qui ad maius peccatum determinatus est, consulere seu suadere peccatum minus.

Quod ut rite intelligatur, advertendum est, eum, qui sic agat, nullatenus optare nec consulere ut peccetur, sed id intendere ipsum atque consulere, ut peccatum diminuatur, seu, ut alter sub illa conditione, quod absolute nolit a peccando desistere, saltem peccatum diminuat. Quodsi ita rem consideras, non videtur ulla difficultas esse, nec ratio, cur aliqui ut C a s t r o p. 1, c. p. 6, V a l e n t i a , C a i e t a n., id licere in tam multis circumstantiis infitientur.

Igitur licebit :

1. Suadere minus malum, quod iam inclusum est in malo illo, ad quod alter alias iam determinatus existit : e.g., si quis alterum vult occidere ut potius vulneret ; aut etiam ei, qui vult adulterium committere, id proponere, quod meram fornicationem

perpetrare via sit gravius peccatum declinandi. Immo etiam de peccato omnino disparato tantum dicere, minus graviter tandem offendi Deum, si hoc committatur : omnes fateri debent et fatentur, hoc licitum esse. Cf. Castrop. 1, c. n. 12.

2. Suadere minus malum prae maiore omnino disparato : quando detrimenti certae personae, de qua alter non cogitavit, inferendi causa vel occasio non sum. Ita quam plurimi cum S. Alph. II, n. 57 secundum effatum S. Aug. (De coni. adult. II 15 ; ML 40, 482) : " Si enim facturus est, quod non licet, iam faciat adulterium, et non facit homicidium."

3. Immo etsi mea suasio occasio sit, cur alteri personae, quam illi, de qua peccaturus cogitaverat, damnum inferatur : si peccatum a me propositum vere minus est, neque ego alteram personam determinatam, cui malum inferatur, designavi, non est ratio cur id dicatur illicitum. V. g. " Si furari viz, potius a divite aliquo rem aufer quam a paupere (sive : quam ab hoc paupere) " ; aut : " si fornicari demum vis, potius cum corrupta quam cum virgine pecca," et similia.

4. Atque etiam si alter secum deliberat, cui malum inferat, Petro diviti an Paulo pauperi, alterusti certo damnum illaturus : videor suadere posse, ut potius Petro diviti quam Paulo pauperi in re temporali damnum inferat ; cum suasio mea in id solum tendat, ut peccatum diminuatur.

5. Sola una hypothesis difficultatem parit : si alter determinatus est ad damnum Paulo inferendum, nihil cogitans de Petro : num suadere possim ut, relicto Paulo, Petro, qui minus sentiat, damnum inferatur. Quod Soto, Lugo, De iust. disp. 19, n. 54 ; Sporer, n. 59 ; Sanchez, De matr. 1. 7, disp. II, n. 24 etc. negant licere utpote contra Petrum iniuriam continens : alii, ut Vasquez, De scand. a I, n. 14 ; Tambur., 1. c. (qui. n. 6—14 id fuse prosequitur per plura exempla discurrens) ; Gury-Baller., I, n. 237 not, id etiam licere contendunt, neque dominum laesum rationabiliter invitum esse posse contra suadentem, sed contra exsequentem. Negantem tamen sententiam in praxi tenendam esse puto cum limitibus infra exponendis, ubi de restitutione ex cooperatione ad damnum sermo erit.

I translate herewith the portions most relevant to the preceding chapter :

" To advise or suggest any sort of sin, *i.e.*, to recommend it directly, is never permissible. But it is sometimes permissible to suggest or persuade anyone determined on a great sin, to confine himself to one less grave.

" In order that this point may be fully understood, it should be made clear that he who gives such advice is far from wishing or advising the commission of a sin, but rather intends and

counsels that the sin should be diminished, or that the person in question, being set on sin and refusing to abstain, should choose the lesser offence.

"Thus it will be permissible:

"1. To advise, rather, a smaller wrong, which is included in the greater wrong whose commission has been *contemplated* or *intended*. For instance, should anyone desire to slay or kill another—let him rather do him some hurt; or, should anyone desire to commit adultery, he should have it pointed out that a mere fornication * (congress with an unmarried woman) might be a way to avoid the greater sin. Yea, it is even permissible, with regard to a sin which is in no wise of the same category of guilt † to say this much: that God would, after all, be less offended if the lesser sin were committed. . . .

"2. It is permissible to suggest rather a lesser evil than a greater evil belonging to another kind of sin. . . . Thus, should anyone be resolved on a grave sin—if he commits adultery, then he does not commit murder. . . .

"3. Even should my advice be that the person whose intentions are sinful, should sin against another person than he originally intended: in so far as the sin I have suggested as preferable is really the lesser offence, and in so far as I have not indicated any special person as victim of that sin: there is then no just reason why such advice should be unlawful. For instance, 'If thou art determined to commit theft and robbery, then at least steal from a rich man rather than from a poor man'; or indeed, 'from *this* poor man.' Or again, 'If thou art determined to commit fornication, then, at least, do so with a woman who has known man already, rather than with a virgin'; and so forth. . . .

"And again: if anyone should deliberate within himself, *against whom* he should commit an offence, the rich Peter or the poor Paul; if so be it he has resolved to offend against one or the other of these two, then, in my judgment, I may lawfully persuade him to injure Peter rather than Paul in his worldly possessions, as my advice aims only at the diminution and mitigation of sin."

Thus far *Lehmkuhl*, whose Moral Theology ranks with that of *Noldin*, as authoritative for the Catholic views of conduct to-day. Does not this question itself suggest that married couples who are resolved to limit their offspring without ceasing from intimate intercourse, should be persuaded to prefer Contraception as the lesser evil—to abortion—as the greater?

* Fornication: Sexual intercourse between an unmarried man and an unmarried woman by mutual consent. After *Scavini*, Theol. mor., Ed. XI.

† That is, a sin against one of the other Ten Commandments.

EPILOGUE

I HAVE finished my expositions and thus concluded my Trilogy. The task undertaken six years ago has been accomplished ; the four corner-stones of the temple of love and happiness in Marriage * have been erected, the foundations are laid, the necessary building material has been collected and the construction is outlined in varying detail. It must now be left to each couple to adapt their temple to their own capacities, needs and—not least—limitations.

I am well aware that still more light and help than I have given on certain points would have been very useful. But, let the contents of these three monographs—" Ideal Marriage," " Sex Hostility in Marriage " and " Fertility and Sterility in Marriage "—suffice for the present. For many of my readers already find some of their contents superfluous, and lay greater stress on my study of the bodily communion between the marriage partners than on my views of their emotional and mental relationships. If any ask me, however, which of my three studies I think most valuable, and which I should recommend to those who could only read one, I should unhesitatingly reply : " The Second ! " ** For that monograph deals with the psychological and emotional factors which act and interact incessantly on both husband and wife.

On the other hand, it would be a mistake to suppose that

* The four corner-stones of the temple of love and happiness in marriage are:
" (1) A right choice of marriage partner :
" (2) A good psychological attitude of the partners, both to the world in general and to each other ;
" (3) A solution of the problem of parentage which meets the wishes of both partners.
" (4) A vigorous and harmonious sex life " (quoted from " Ideal Marriage," Chapter I., p. 2).

** I would suggest, together with its commentary, " Die Erotik in der Ehe " (" The Importance of Erotics in Marriage ").

this preference for the second volume means depreciation of the physiological aspect of sexual relations, or recantation of the views I have already expressed on their value and significance. Sex—or rather, sex evolved, expanded and refined into *love*—is the basis of marriage, and finds its most intense and potent expression in mutual sexual communion. So we must make available for this intense mutual expression all possible resources, through increase of knowledge and control of actions, in order that mutual love and joy may become greater—this is an irrefutable, though often neglected, right.

But the expert mastery of the physical aspect of sex must not become an *end in itself*—for, otherwise, the elusive ecstasy and permanent happiness alike are forfeited; it remains a just and necessary human demand, which mistakes do not nullify.

My work has aimed at making the need for all these complexities understood, and the knowledge of the psychophysical conditions available.

May it help to make more and more married people understand their own nature and their beloveds'; and to make more and more " Ideal Marriages "—both in the spirit and in the flesh !

SINCE this work has gone to press arrangements have been made for the manufacture of Dr. Van de Velde's preparation (mentioned on page 352); it can shortly be obtained at all chemists, and is made by Messrs. Harman Freese, 32, Great Dover Street, London, S.E. 1, who are also the makers of the Author's other prescription referred to in " Ideal Marriage," Chapter 10, page 169, and of the pessaries described in Chapter 14, page 335, and Plate XVII. in the present volume.

(PUBLISHERS' NOTE.)

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PLATE I.

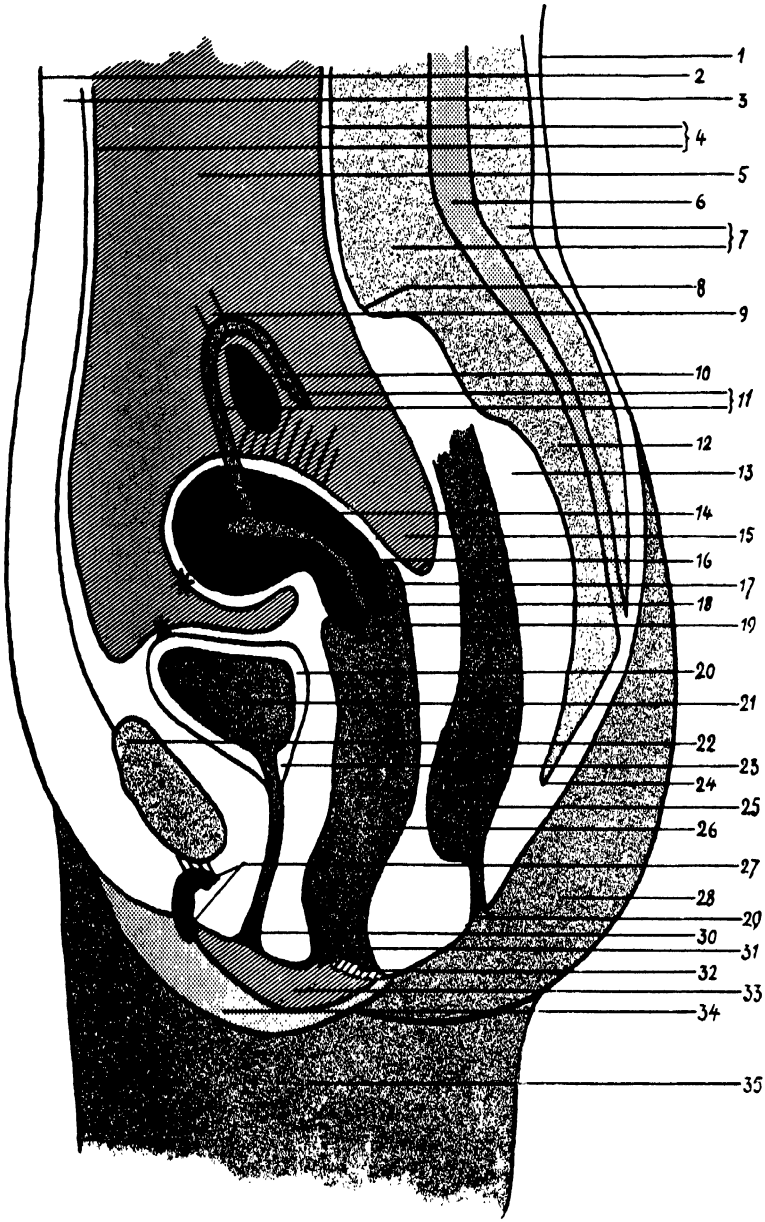
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PLATE I.

INTERNAL GENITAL ORGANS OF A WOMAN, IN VERTICAL SECTION.

1. Skin of back. 2. Skin of abdomen. 3. Anterior or frontal abdominal wall. 4. Abdominal membrane or *peritoneum*. 5. Abdominal or peritoneal cavity (*Cavum peritonei*). 6. Spinal or vertebral canal, known as sacral canal below the *promontorium*. 7. Spinal column. 8. Promontory. 9. Suspensory ligament of the ovary * (*Ligamentum suspensorium ovarii*). 10. Ovary.* 11.* Oviduct or Fallopian tube (*Tuba Fallopii*). 12. *Os sacrum*. 13. Canal of the os sacrum or sacral canal. 14. Womb (*Corpus uteri*). 15. Douglas's pouch (*Excavatio recto-uterina*) (compartment of the abdominal cavity). 16. Neck of the womb or *cervix uteri*. 17. Posterior vaginal vault (*Laquear posterius, Fornix vaginæ*). 18. *Portio vaginalis uteri* (14, 16 and 18 are component parts of the womb). 19. Exterior orifice of the womb (*Os externum uteri* or *ostium*). 20. Posterior surface of the bladder. 21. Bladder (*Vesica urinaria*). 22. Pubic bone (*Symphysis ossium pubis*). 23. Neck of the bladder with sphincter muscle. 24. Extremity of pelvic bone (*Os coccygis*). 25. Rectum.† The enlarged portion is termed *Ampulla recti*. 26. Vagina. 27. Clitoris with tip exposed (*Glans clitoridis*). 28. Inner surface of right buttock (*Nates*). 29. Anus. 30. Orifice of the urethra or urinary passage (*Ostium urethræ*). 31. Orifice of the vagina (*Introitus*). 32. Hymen (diagonally marked). 33. Inner surface of the *Labium minus*. 34. Inner surface of the *Labium majus*. 35. Inner surface of the upper portion of the right thigh.

* Note that in 9, 10 and 11 the oviducts, ovaries and ligaments are really bilateral organs, flanking the womb. In the drawing, the right-hand structures are represented, but not in section, like the remaining organs.

† The rectum is depicted as ending abruptly as it turns towards the left.

PLATE II.

ANATOMICAL SKETCH OF INTERNAL FEMALE GENITALIA.

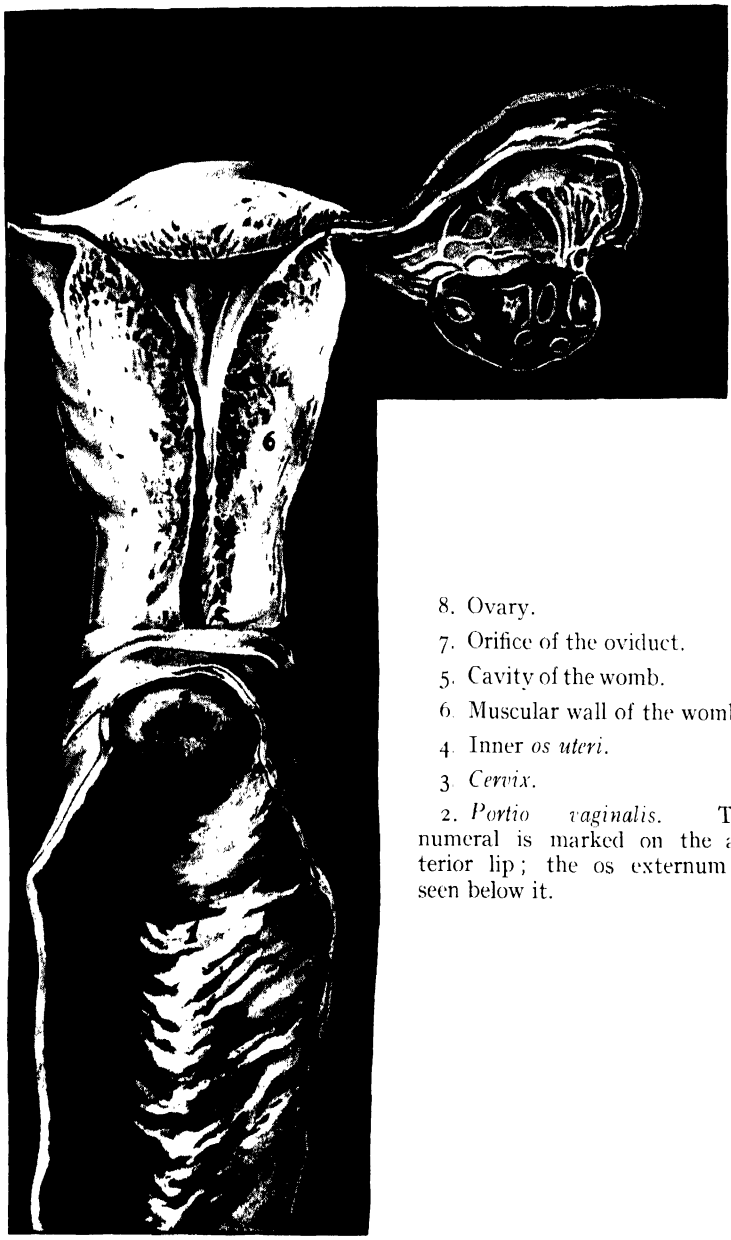
VERTICAL SECTION THROUGH WOMB, LEFT OVARY AND LEFT TUBE.

The front wall of the vagina has been removed, but the portio is left in its natural shape and position.

1. Posterior vaginal wall.
2. *Portio vaginalis.*
3. *Cervix.*
4. *Os internum uteri.*
5. Uterine cavity.
6. Muscular wall of uterus.
7. Orifice of the oviduct.
8. Ovary.

Further information may be gained by comparison with succeeding plates. The shading of the muscular wall of the uterus and the muscles of the tubes and ovary are irrelevant. We do not attempt to represent the *appearance* of the uterine *mucosa*, which can only be recognised by its folds (5).

PLATE II.



8. Ovary.
7. Orifice of the oviduct.
5. Cavity of the womb.
6. Muscular wall of the womb.
4. Inner *os uteri*.
3. *Cervix*.
2. *Portio vaginalis*. The numeral is marked on the anterior lip; the os externum is seen below it.

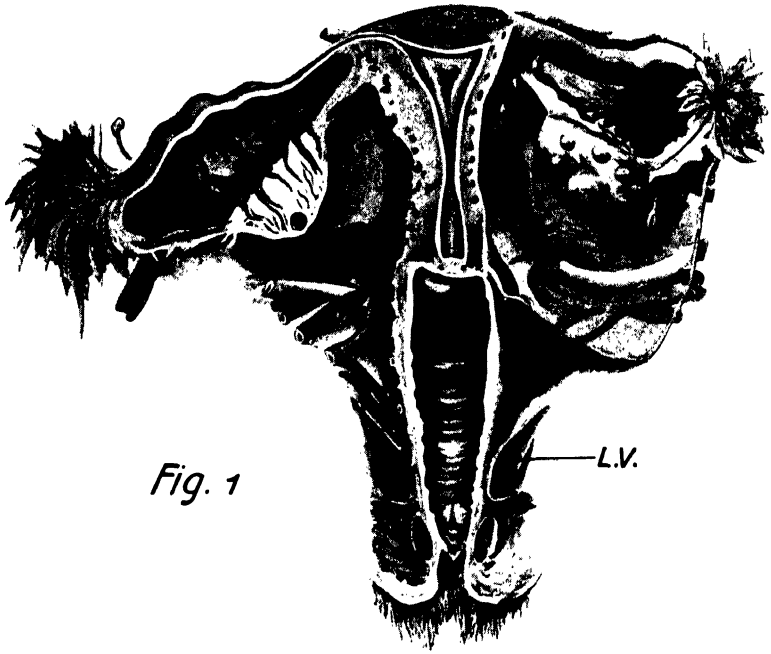


Fig. 1

Fig. 2

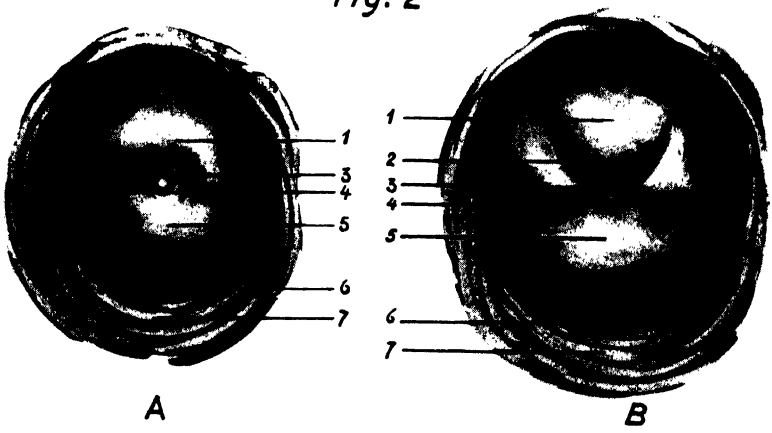


PLATE III

Fig. 1.—FURTHER ANATOMICAL ILLUSTRATION OF THE INTERNAL FEMALE GENITALIA. (Adapted from *Waldever* in *Joessel-Waldever's* "Lehrbuch der topographish-chirurgischen Anatomie," Vol. II., p. 750.)

A vertical section, as in the preceding plate; but, whereas in Plate II. the front vaginal wall and the front segment of the uterus had been removed, the reverse is the case here, and we look forwards, from behind, into the anterior half of the genitalia. Thus, we can see the orifice of the urethra, just below the anterior vaginal wall.

The left oviduct and ovary are shown in section; the right adnexa (oviduct and ovary) are left intact; the right ovary bears a ripe Graafian follicle on the point of extruding the ovum.

The vascular and muscular systems, indicated in this plate, are irrelevant to the subject of my treatise. But, in reading and digesting the concluding pages of Chapter V., it would be well for those interested to observe the muscles marked by me with L.V. (*levator vaginæ*).

Finally, it should be realised that whereas the ovaries are only visible on Plate II. because the *Ligamentum latum*, or broad ligament, which would cover and conceal the ovary in an actual inspection of the genitalia from the front, has been omitted from the illustration, in the present plate the ovaries are clearly visible, even though the *Ligamenta lata* are also fully represented; for we look *forwards and from behind*. The position of the ovaries, supported by the posterior surface of the *Ligamentum latum*, is clearly and exactly revealed.

Fig. 2.—*PORTIO VAGINALIS UTERI*. LOWER EXTREMITY OF THE WOMB, LIFE-SIZE.

A. In a nullipara. (Woman who has not borne a child.)
B. In a multipara. (Woman who has borne several children.)
1. Anterior lip of the *os*, or uterine orifice, or mouth of the womb.
2. Lacerations of *os*, following previous births.
3. Exterior orifice (*os externum uteri*). (Round or oblong in the nullipara and a cross slit in the mother.)
4. Part of the *Kristeller* mucus plug, protruding from the *os uteri*.
5. Posterior lip of the *os*.
6. Posterior vaginal vault; *fornix* or *laquear posterius*.
7. Posterior (rear) wall of vagina.

Taken from *Hofmeiers'* "Handbuch der Frauen-Krankheiten," published by F. C. W. Vogel of Leipzig, 1921.

The Kristellers and numerals have been added by Dr. *Van de Velde*.

PLATE IV.

MAIN OUTLINES OF THE REPRODUCTIVE ORGANS OF MAN AND WOMAN, INDICATING THE TRANSPORT OF THE SPERMS AND OVUM AND THEIR MOVEMENTS. (Adapted with slight modifications from *Sellheim* "Zeitschrift für Ärztliche Fortbildung," XXI., No. 10.)

Dotted line : Path of the Spermatozoa.—The latest surviving sperms, which have missed union with the ovum, are dispersed and lost in the abdominal cavity at 23.

Broken line : Path of the Ovum.—The ovum is expelled from the ovary at 20, and, if not fertilized, is lost in the menstrual discharge from the womb, 24.

Continuous Line, 21–22 : Path of the Fertilized Ovum.—Spermatozoön and ovum meet approximately at 21 (in the fringed mouth of the tube). The fertilized ovum reaches the point in the uterus marked 22, developing itself in readiness for implantation the while. (At 22 it adheres to the mucosa and implantation takes place.) Cf. Plate V.

ANATOMICAL LETTERING AS FOLLOWS :

Testicles	1
Epididymis	2
Vas deferens	3
Reservoirs	4
Vesiculæ seminales	5
Prostate gland	6
Urethral crest or *colliculus*, with the minute orifices of the *vasa deferentia*	7
Cowper's glands	8
Urethra	9
Vulva	10
Vagina	11
Seminal ejaculate	12
Kristeller plug in neck of womb	13
Os externum uteri	14
Os internum uteri	15
Cavity of womb	16
Orifice of Oviduct or tube	17
Bell Mouth of tube	18
Ovary	19
Freshly ruptured Graafian follicle	20

PLATE IV.

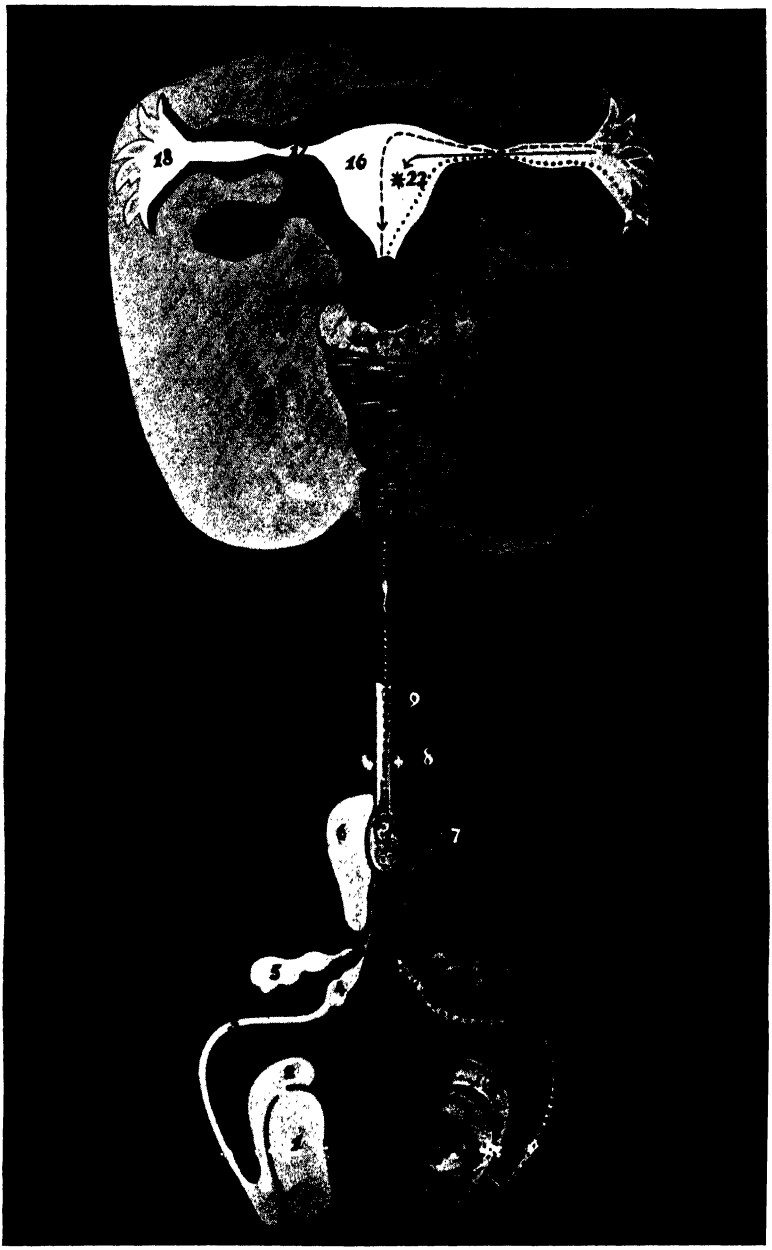


PLATE V.

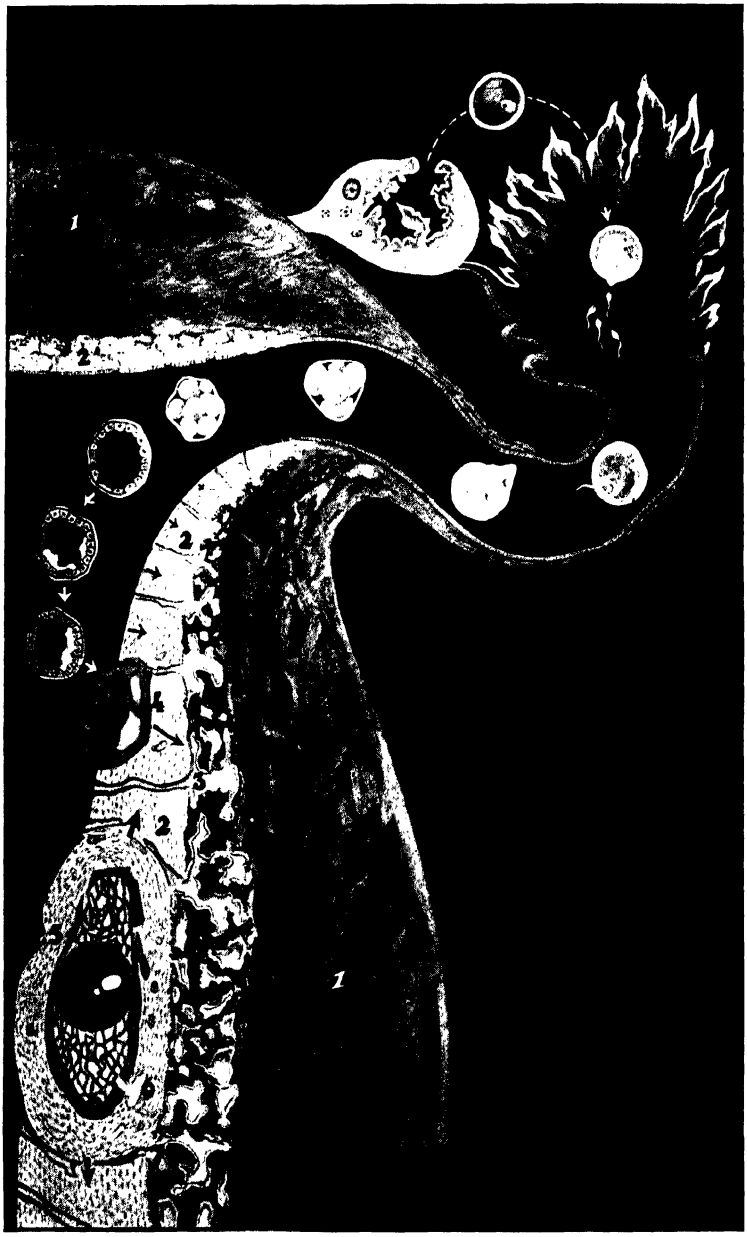


PLATE V.

DIAGRAM OF THE DEVELOPMENT OF THE FERTILIZED OVUM, UNTIL RIPE FOR IMPLANTATION, AND OF ITS MOVEMENT THROUGH THE UPPER GENITAL TRACT. (After *Sellheim* "Zeitschrift für Ärztliche Fortbildung," XXI., No. 10, with slight modifications.)

Explanatory Notes.— The extreme left upper corner of the uterus with tube and ovary are shown much magnified. For the sake of clearness, the ovary has been represented *above* the other organs, and the lateral portion of the tube is *proportionally* much too short. The path of the ovum is in reality far longer.

The darker portion, marked 1, is the muscular wall of the womb: the *mucosa* is marked 2, and the *mucous glands*, which are distinctly recognisable, are marked 3. The four upper arrows show the power with which the mucosa attracts the ovum; the three lower arrows show the exact angle at which the ovum merges with the mucosa and its growth in both directions.

Nidation began at the point marked 4. At 5 is depicted the first stage of complete implantation.

The ovum is flung out of the ovary still encased in the epithelial substance in which it matured. It goes through its initial cell division and protrudes its "receptive cone" towards the nearest spermatozoön. The cells merge, *i.e.*, fertilization takes place. The second cell division follows; the two essential gametic nuclei approach each other and merge. There follows rapid proliferation of cells. The ovum sends out roots by which it is attached to the womb at the point of adhesion. Meanwhile, the uterine lining has become ripe for the implantation of the ovum, both uterine mucosa and fertilized ovum attract each other at the point of adhesion. Implantation is followed at once by the development of capillaries 6 and lymph ducts 7.

PLATE VI.

Fig. 1.—*Ripe Graafian follicle with ovum.* Magnified section. (From *Bumm*: "Lehrbuch der Geburtshilfe," 11th Edition, Fig. 18, p. 27.)

Fig. 2.—*Ovum still surrounded with epithelial cells (corona radiata) from the ovary*, immediately after extrusion from the Graafian follicle. Much magnified. (From same work, 11th Edition, Fig. 20, p. 29.)

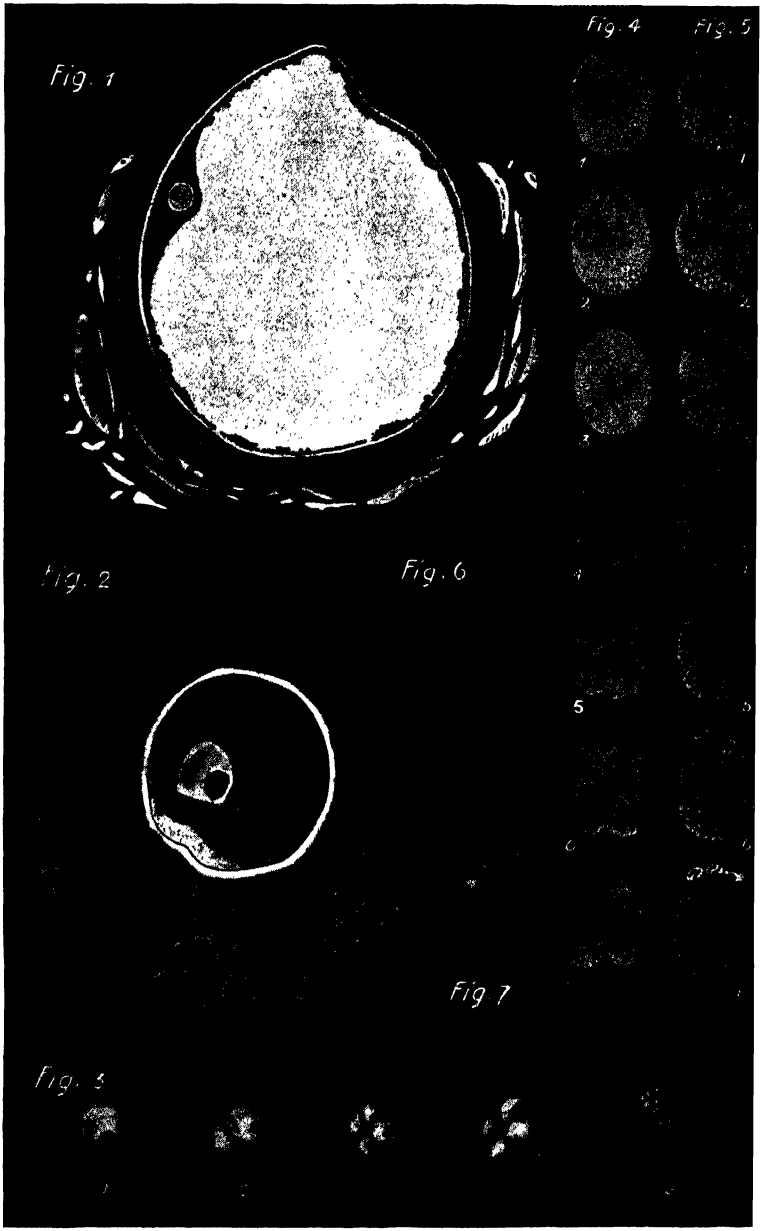
Fig. 3. (Nos. 1 to 5).—*Cell Division of the ovum after fertilization.* (From *Kahn* "Das Leben des Menschen," Vol I. It should be borne in mind that the cluster of cells in No. 5 has exactly the same dimensions as the single cell in No. 1. Cf. the stages of *inter-ovular* development before implantation on Plate V.

Fig. 4 and **Fig. 5.** (Nos. 1 to 7).—*Maturation and cell division of the primordial male cell* (4) *and primordial female cell* (5) (From *Kahn*, as above.)

Four definitely functional spermatozoa develop out of each individual primordial male cell; all are able to fertilize an ovum after going through their final stages (developing heads and propellers, etc.). Each individual primordial female cell, however, forms only *one* functional ovum. For details, see Appendix V. to Chapter IV., and cf. Figs. 1 and 2 on Plate VII.

Fig. 6 and **Fig. 7.**—*Spermatozoa*, very highly magnified. In Fig. 6 they are magnified to the same scale as the ovum in Fig. 2, in order to show their comparative minuteness. Fig. 7 is drawn to a much greater scale, in order to show their much more fragile structure.

PLATE VI.



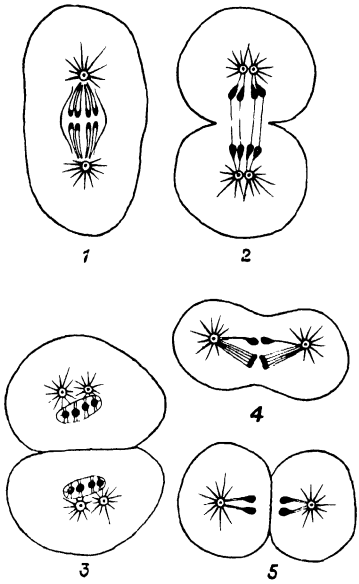


Fig. 1

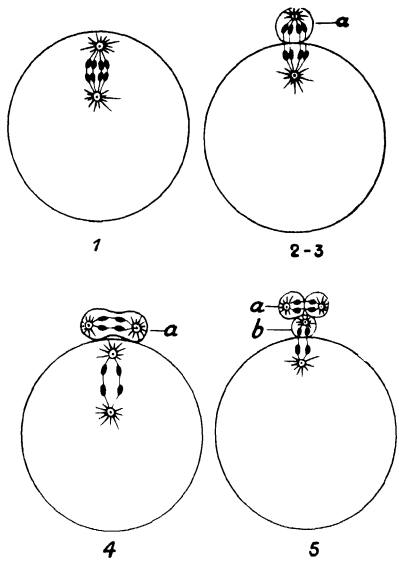


Fig. 2

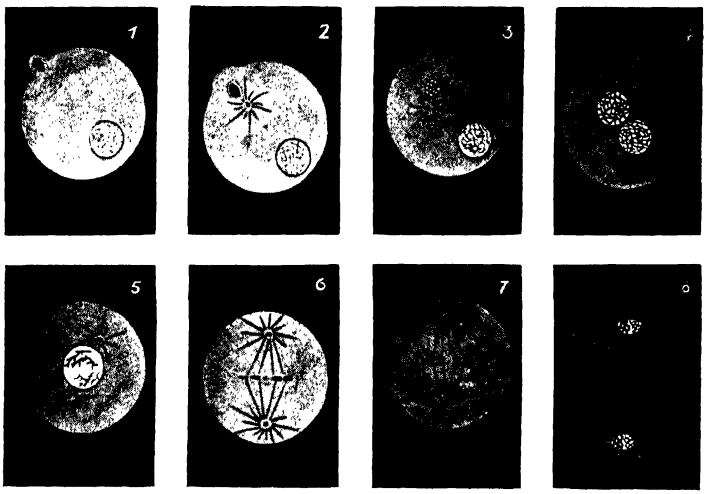


Fig. 3

PLATE VII.

Fig. 1 (Nos. 1 to 5).—*Course of Cell Division during Spermatogenesis* in the parasitic worm *Ascaris megalocephala*. (After *Brauer*, "Archiv. für Mikroskopische Anatomie," Vol. 42, 1893. Taken from *Meisenheimer's* Monograph, *Grundlagen der Vererbungslehre*, in *Veit-Stöckel's* "Handbuch der Gynäkologie," 3rd Edition, Vol. II., p. 372. (Munich, *Bergmann*, 1926.)

Nos. 1 3. Initial cell division.

Nos. 4 5. Second cell division.

Cf. Fig. 4, Nos. 1–7, on Plate IV. and Appendix V. to Chapter IV.

Fig. 2 (Nos. 1–5).—*Course of Cellular Divisions during Oogenesis*. Somewhat stereotyped in order to facilitate comparison with spermatogenetic stages (see above). Nos. 1, 2 and 3. Initial Subdivision. Formation and division of the first *gametic nucleus*. This Fig. 2, Nos. 1–5, has been taken from *Meisenheimer's* Monograph (cited above), on p. 374. In order to facilitate comparison with the processes depicted in Fig. 1, I have omitted the previous stages.

Cf. further Fig. 5, Nos. 1 7, Plate VI., also Appendix V. to Chapter IV.

Fig. 3 (Nos. 1–8).—*Process of Fertilization*. Description in Appendix to Chapter IV., No. 5.

PLATE VIII.

Fig. 1.—*Normal female pelvic organs in sagittal section.* (From *Eduard Martin*, "Der Haftapparat der weiblichen Genitalien, eine anatomische Studie," Part I., Plate X., S. Karger, Berlin, 1911.)

This illustration is on a very small scale and somewhat simplified. It serves to indicate the position of vagina and uterus within the pelvis in a normal and average case. The vagina is *curved forwards* and *slopes backwards* in this case.

Fig. 2.—*Normal female pelvic organs in sagittal section.* (After Fig. 181 "Normal position of the uterus according to *Bardeleben*" in *Menge-Opitz*, "Handbuch der Frauenheilkunde" (Bergmann, 1920). The illustration shows a normal case, with a *forward slope but backward bend* of the vagina.

Fig. 3.—*Position of pelvic parts in supine horizontal posture. Thighs extended.*

Fig. 4.—*Position of pelvic parts in "Lithotomy" posture.* Both 3 and 4 are adapted from *Bumm*: "Operativer Gynäkologie" (J. P. Bergmann, Munich, 1926). Note the difference in the *direction* of the vagina, and the respective angles of vagina and *portio*; also position of the *portio* as regards other pelvic organs.

PLATE VIII.

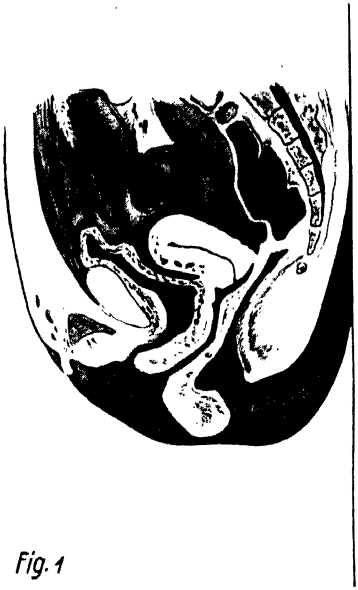


Fig. 1

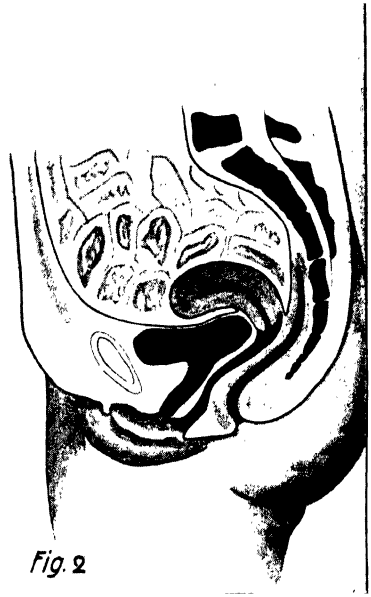


Fig. 2

Fig. 3

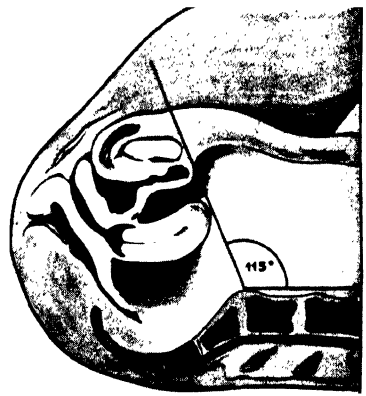


Fig. 4

PLATE IX.

Fig. 1

Fig. 2

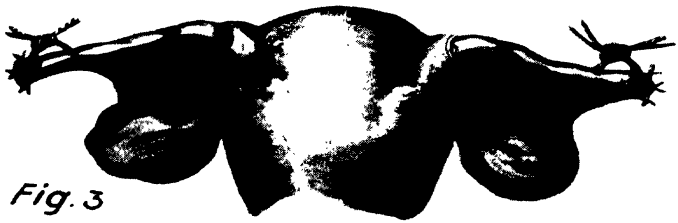


Fig. 3

PLATE IX.

Fig. 1.—*View from above into the Female Pelvis.* (Adapted from "Lehrbuch der Geburtshilfe," by *W. Stoeckel.* Gustav Fischer, Jena, 1920.)

This gives a good idea of the positions and proportions of the internal Genitalia :—

Dome of Bladder		1
Uterus or womb		2
Round band (*Ligamentum rotundum*).	Bilateral	3
Oviduct or tube	,,	4
Ovary	,,	5
Mouth of oviduct	,,	6
Rectum		7
Douglas's pouch. (Rear cavity of abdomen between womb and rectum)		8
Douglas's fold. (*Ligamentum Douglasii*)*	Bilateral	9
Broad ligament (*Ligamentum latum*)	,,	10
Vesico-uterine space.† (Cavity between uterus, bladder and front wall of the pelvis.) Cf. Plates I. and II.		11
Membrane lining to abdomen (peritoneum) on the anterior inner surface		12
Symphysis. (Pubic bone)		13

Fig. 2. *Uterine Implantation of Tubes following removal of injured portions.* View from above into the pelvis. (Taken from *Sellheim's* Treatise, "Weitere Fortschritte in der Sterilitätsbehandlung," Berlin, 1927, Karger.) The long thread drawn through the uterus serves only to hold the organ firmly in position.

Fig. 3.—*Implantation of tubes as in Fig. 2 and formation of new orifices* after removal of the abdominal extremities which had become occluded. (From *Sellheim's* treatise, as above.)

* Cf. E, in Fig. 3 of "Ideal Marriage."
† Cf. 11 in Plate I.

PLATE X.

VERTICAL SECTION OF FEMALE PELVIC ORGANS (to about the same scale as on Plate I.).

Left edge of outer lip (*Labium majus*)	1
Left edge of inner lip (*Labium minus*)	2
Clitoris	3
Symphysis pubis	4
Abdominal muscles (*Mm. recti*)	5
Bladder	6
Uterus	7
Rectum	8
Os sacrum	9
Anus	10
Introitus (vaginal entrance)	11
Orifice of urethra	12
Vagina (about half natural length)	13
Anterior vaginal vault or fornix (*Laquear anterius*)	14
Os externum uteri or mouth of womb	15
Posterior vaginal vault or fornix (*Laquear posterius*)	16

This plate is especially meant to elucidate Figs. 1 and 2 in Plate XI.

PLATE X.

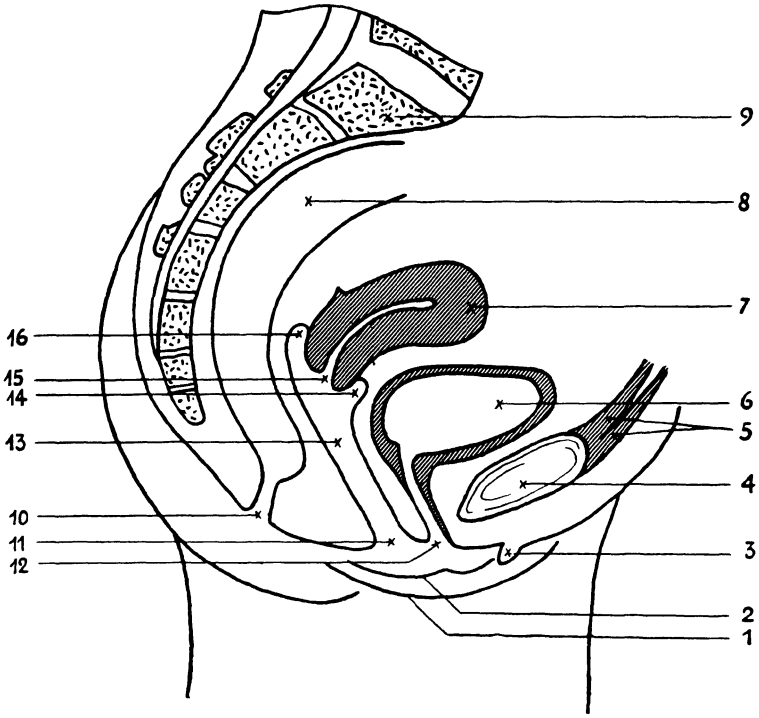


Fig. 1

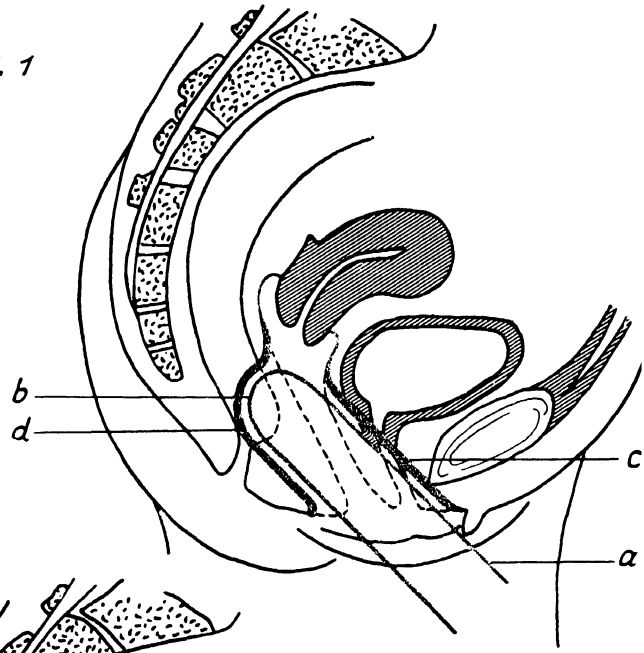


Fig. 2

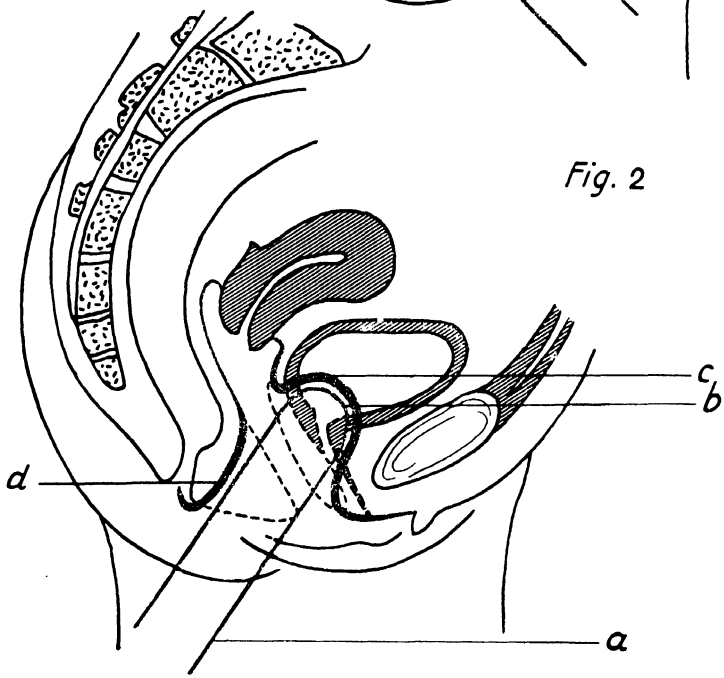


PLATE XI.

POSITION OF PARTS IN COITUS FROM THE FRONT AND THE REAR.

Fig. 1.—The same longitudinal sections as in Plate X. with additions, *showing positions of parts in coitus from the front, or obverse coitus.* Further details in Chapter XIII.

The shadowed line *a* shows the outline of the male organ, and *b* indicates the orifice of the male urethra. The lines *c* and *d* convey an idea of the altered position of vagina and rectum when the phallus enters from in front. For the sake of clearness, there is no indication of the pressure and temporary change of position of other organs. We must further emphasize the *schematic* character of these illustrations. The broken lines show the normal outlines of the female organs in repose, as in Plate X.

Fig. 2.—The same longitudinal section, *showing positions of parts in coitus from the rear, or a tergo.* Further details in Chapter XIII. *a*. Phallus with ostium urethræ *b*. The lines *c* and *d* show the vaginal and rectal pressures and positions. The broken lines show the normal outlines of the female organs in repose, as in Plate X.

PLATE XII.

Fig. 1 (Nos. 1 to 19).—*Some of the abnormalities in human spermatozoa,* as observed by *Mönch.* After the Essay by *G. L. Mönch,* " Zur Frage der Menschlichen Sterilität " in the *Zentralblatt für Gynäkologie,* 1927, No. 43. Cf. the details in Chapter X.

Normal form	1
Microspermatozoon	2
Megalospermatozoon	3
Irregularity of head, due perhaps to adhesion of Sertoli's cellular membrane	4
Narrow head and swollen middle portion	5
Irregular head, no middle portion	6
Undeveloped head, no middle portion	7
Rudimentary form ; tail twisted round head	8–9
Imperfect cell, bad colour, narrow head, undeveloped tip ; middle portion and propeller lacking	10
Middle portion thread-like with thick rear (hypertrophied tail)	11
Cytoplasmic extravasation	12
Head cut off sharply behind, over developed tip	13
Pointed head	14
Middle portion set sideways	15
Double forms	16–19

Fig. 2.—*Peitmann's Operation : Tubal Sterilization.* After *H. Peitmann's* Essay in the *Zentralblatt f. G.,* 1926, No. 26, " Zur Technik der tubaren Sterilization."
Description in Text of Chapter XV.

Fig. 3 and **Fig. 4.**—*Madlener's Operation of Tubal Sterilization.* After Madlener's Essay in the *Zentralblatt f. G.,* 1919, No. 20, " Über sterilisierende Operationen an den Tuben."
Description in text of Chapter XV.

PLATE XII.

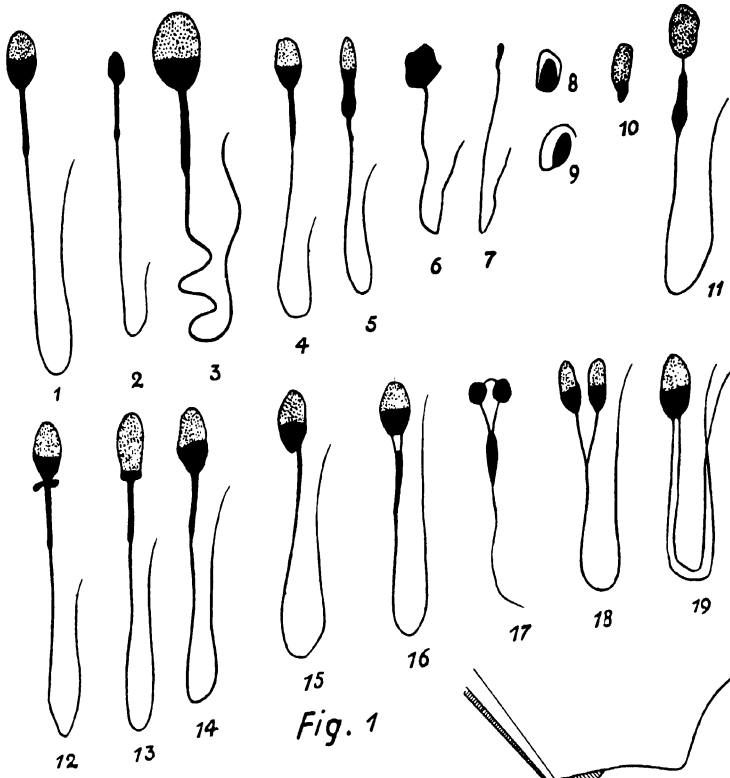


Fig. 1

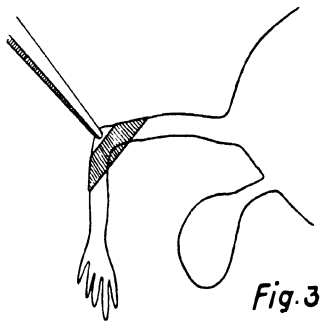


Fig. 3

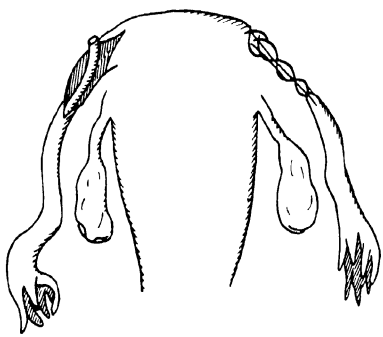


Fig. 2

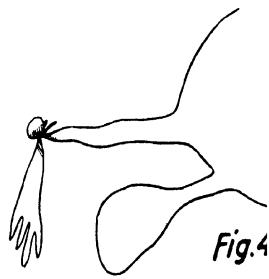


Fig. 4

PLATE XIII.

Fig. 1

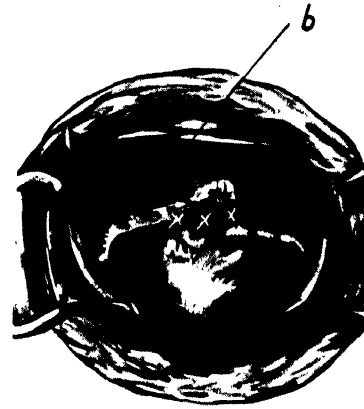


Fig. 2

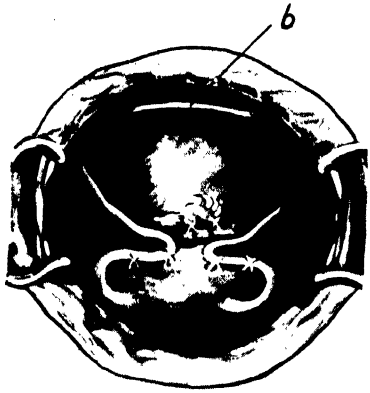


Fig. 3

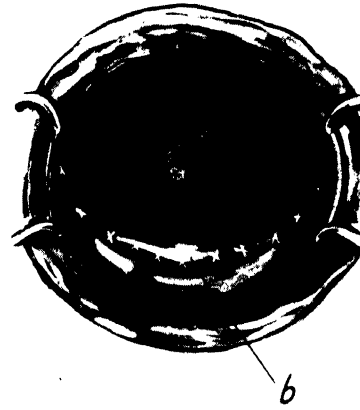


Fig. 4

PLATE XIII.

LITTAUER'S OPERATION FOR TEMPORARY STERILIZATION.—Inclusion of the tubes or oviducts in the vesico-uterine cavity and suturing of this cavity. (From *Littauer's* Report in the *Zeitschrift für Geburtshilfe und Gynäkologie*, Vol. XCIII.)

Fig. 1. The left oviduct is freed from its point of junction—shown by three white lines *a a*—drawn through an incision in the *Ligamentum latum*, below the *Ligamentum rotundum*, which has been lifted.

Fig. 2.—Both oviducts are attached to the frontal outer wall of the womb with three stitches (XXX). The womb is represented as larger than normally, for in the case represented there had been a pregnancy.

Fig. 3.—Both the *Ligamenta rotunda* are attached to the frontal uterine wall, in order to keep the womb well forwards as well as to form part of the covering for the oviducts.

Fig. 4.—The easily mobile *vesical fold* of the peritoneum (*b*) which is visible in both Fig. 2 and Fig. 3, above, is sutured to the upper frontal uterine wall, without apertures, thus shutting off or encapsulating the space between bladder and uterus, which now contains the oviducts.

(See also the text of Chapter XVI.)

PLATE XIV.

TEMPORARY STERILIZATION ACCORDING TO VAN DE VELDE.

Shifting forwards of the ovaries and encapsulation of these organs in the space between uterus and bladder. (See Chapter XVI. of text.)

It should be observed that, in order to elucidate the process, the relative positions and proportions are somewhat stereotyped in these Plates. Moreover, they have not been treated as typical sketches of a surgical operation (like those of *Littauer's* operation on Plate XIII.) but rather, in some respects, as anatomical "bird's-eye views." For this reason, they are represented with the symphysis undermost, as though the spectator looked in the direction of the head into the abdominal cavity and not as in *Littauer's* illustrations in the direction of the feet. Thus, in the present plates, the symphysis pubis is *below* the other organs (3); in Plate XIII. it would lie at the top of the illustration.

Fig. 1.—The abdomen has been opened (and much more widely than would be the case in actual operations on living human beings). The spectator looks straight down on the rear outer wall of the uterus, which lies firmly bending forward. At the same time the *bilateral adnexa* are visible, as they lie supported on the rear surface of the *Ligamenta lata;* and we also have a view of the space immediately in front of the uterus.

Posterior outer wall of uterus 1
Dome of bladder 2
Between both of these lies the *vesico-uterine cavity* into which the ovaries must be removed. It is a darkly-shaded pouch, bounded on either side by the *Ligamenta rotunda* which curve into the interior of the groins (4).
Symphysis 3
Point of departure of the *Ligamentum ovarii* (attaching ovaries to womb) 6
Point of departure of oviduct 5
Broad ligament—*Ligamentum latum* 7
Ligamentum sacro-uterinum (irrelevant in this operation) 8
Oviduct or tube 9
Ovary 10

S.S. is the incision into the *Ligamentum latum*, just below the ovary, in order to remove the latter organ into the vesico-uterine cavity. The ovary, which is attached to the broad band by a wide strip of peritoneal membrane, which is not clearly visible in the illustration, is *turned over* in the course of the operation—in order to enable the incision to be made in the right place—and is so depicted. In order to obtain a fuller image of the factors involved, compare Fig. 1, Plate III. and Fig. 1, Plate IV.

Fig. 2.—The uterus has now been lifted backwards and upwards by the *Ligamenta rotunda*, so that the incisions shown in Fig. 1 have been stretched to button-holes (they are slightly exaggerated in the drawing) and are visible on the frontal surface of the *Ligamenta lata*.

For demonstration purposes, both oviducts have also been depicted in the same position, *i.e.*, as drawn upwards.

PLATE XIV.

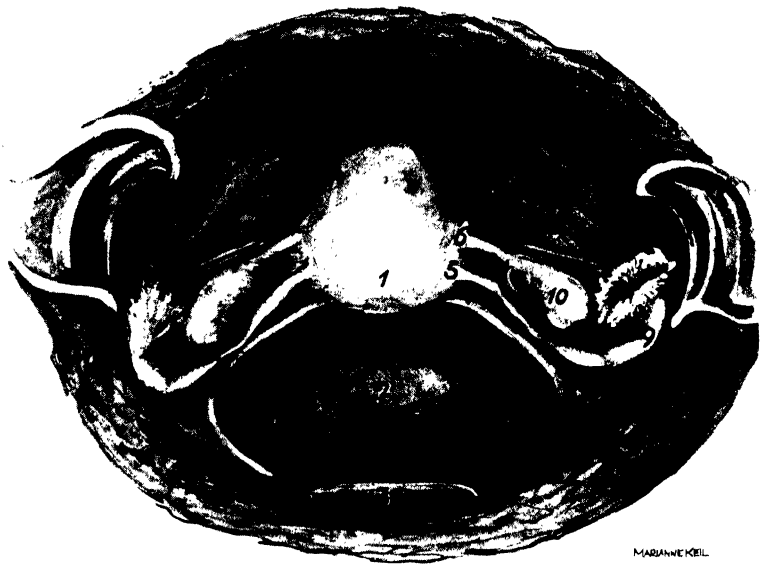


Fig. 1

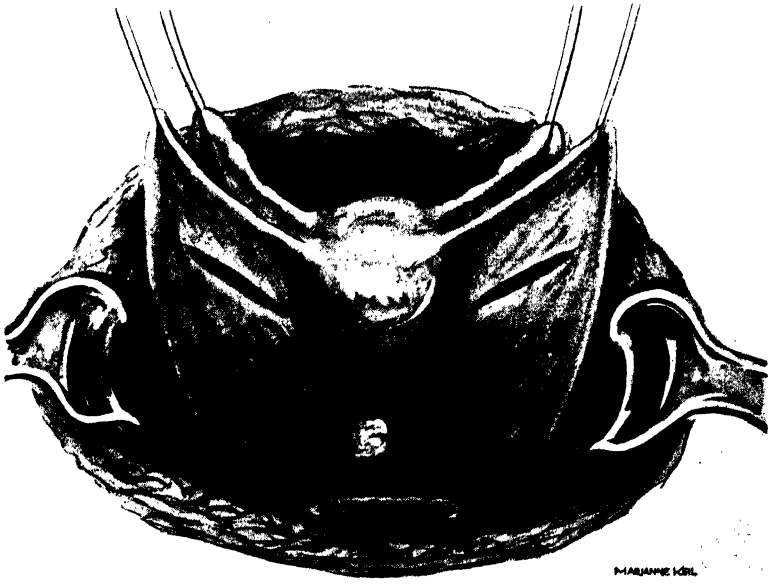


Fig. 2

PLATE XV.

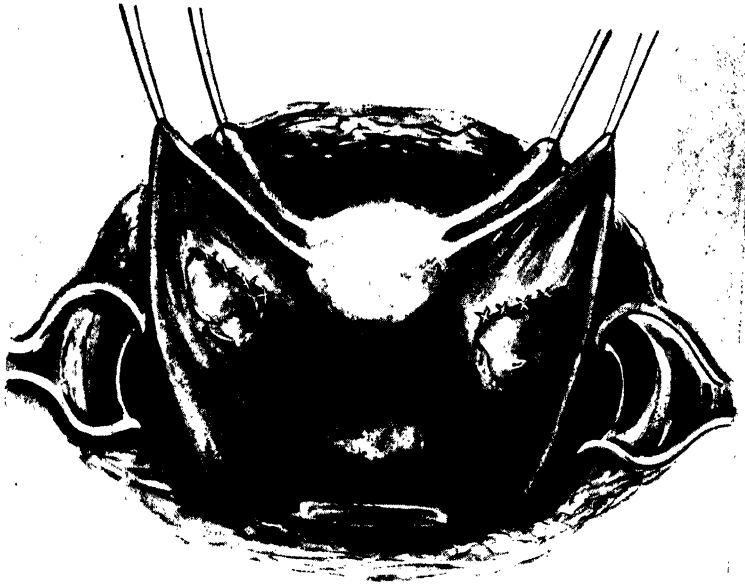


Fig. 1

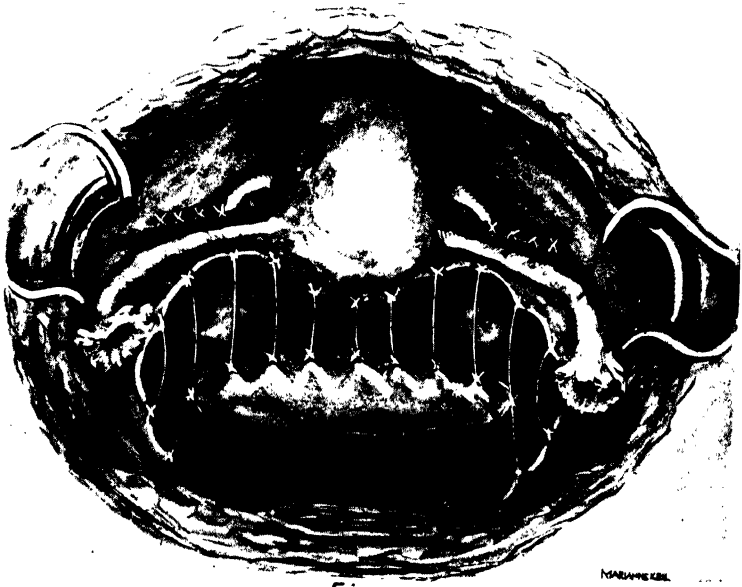


Fig. 2

PLATE XV.

CONCLUDING PORTIONS OF VAN DE VELDE'S OPERATION.

Fig. 1 (*Third Stage*). Organs as in the previous picture. But the ovaries have been slipped forwards through the incisions and fixed securely by means of stitches (here shown simply by crosses) which, at the same time, firmly suture the slits.

Fig. 2. (*Fourth Stage of Van de Velde's Operation*). The normal positions restored as in Fig. 2 with this exception that the ovaries are no longer *behind* the *Ligamenta lata*. The slits have been firmly stitched together and the transplanted ovaries are visible *flanking* the uterus on either side and *in front*, in the depth of the vesico-uterine cavity. (The forward direction of the mobile mouths of the oviducts in the illustration has no real significance; they are thus depicted in order to reveal the slits clearly.)

The stitches destined finally to close up the vesico-uterine cavity and thus *encapsulate* the ovaries in their new site, have been made, but not yet drawn fast.

It would be superfluous to give a picture of the completed operation, as it would closely resemble the final picture of *Littauer's* series (Fig. 4, Plate XIII.).

PLATE XVI.

Fig. 1.—*Enlargement of that portion of the pelvic section* of Plate X., which represents the female genitalia. The numbers run as in Plate X. Sagittal section. The size is *slightly over half* normal dimensions. The vagina is drawn moderately relaxed, in the upright posture of the woman.

Fig. 2.—*Mensinga's* Occlusive Pessary. The material is dark, soft and rather thick rubber, not specially prepared, and with a flat watch spring round the circumference. The point marked *a* should rest in the posterior vaginal vault; *b* should lie just above the lower inner rim of the *symphysis pubis*, against the anterior vaginal wall. The portio vaginalis and *os externum* should be about *c*, and the arch from *b* to *c* lies in folds along the anterior or front vaginal wall. Dr. Van de Velde recommends this pessary, but made of thin condom rubber.*

Fig. 3.—*Mensinga's* Occlusive Pessary pressed together ready to be inserted through the *introitus* into the vagina.

Fig. 4.—(Cf. Fig. 1).—*Position of the Mensinga Pessary in situ.*

The lightly dotted line reproduces the stretching of the front vaginal wall caused by the upward passage of the pessary's rim behind the lower edge of the symphysis.

The heavier broken line shows the *normal* outline of the dome of the pessary, and the thick black line the folded dome as it actually adapts itself to the *portio* and anterior vaginal wall.

Fig. 5.—Occlusive pessary on *Mensinga's* principle (variation "Ramses"). Material amber coloured, specially prepared and translucent rubber with a thicker rim containing a spiral steel spring. (Lettering as in Fig. 2.) The "Ramses" pessary is more frequently used in Germany than *Mensinga's* original design. In certain cases there are advantages in the thicker rim, but the narrow initial pattern is generally to be preferred. The specially prepared translucent, light-coloured rubber of the "Ramses" is generally somewhat harder and no thinner than the opaque dark substance of the *Mensinga*. Nevertheless, the "Ramses" model is also available in the same substance as the *Mensinga* and, in such cases, the only differences are in circumferences and the springs.

Fig. 6.—Occlusive Pessary "*Matrisalus*," made of thick rubber. The narrow upper section (*a*) should be in the posterior vaginal vault; the wide indented portion (*b*) should fit into the curve of the *symphysis*. Portio vaginalis and *os* would be approximately at (*c*). The curve from (*b*) to (*c*) follows the front vaginal wall. When inserting the *Matrisalus* pessary, it is essential that the arch of the dome should come well forward. The selection of an appropriate size is more difficult with the *Matrisalus*, and it is harder to adjust properly and in the correct position.

These pessaries have all been represented as they would be when in the vagina of a woman standing upright on her feet. The scale is about the same as in Fig. 1.

* See Publishers' Note to Plate XVII.

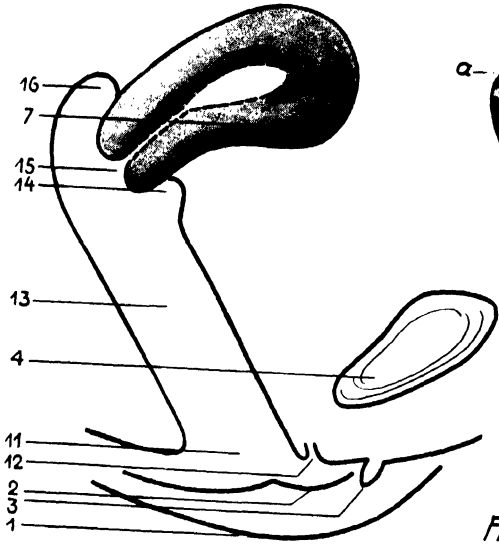


Fig. 1

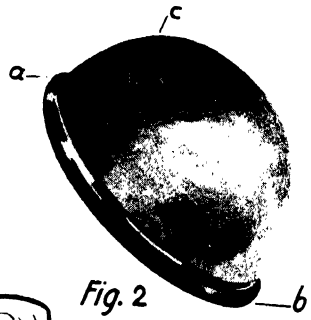


Fig. 2

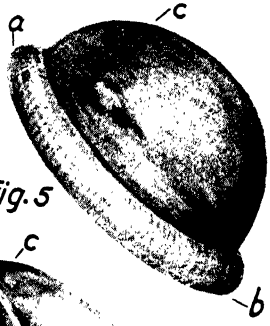


Fig. 5

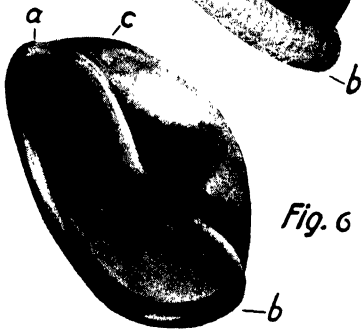


Fig. 6

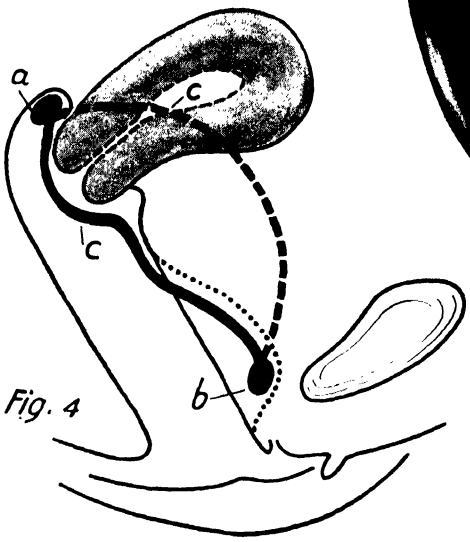


Fig. 4

Fig. 3

PLATE XVII.

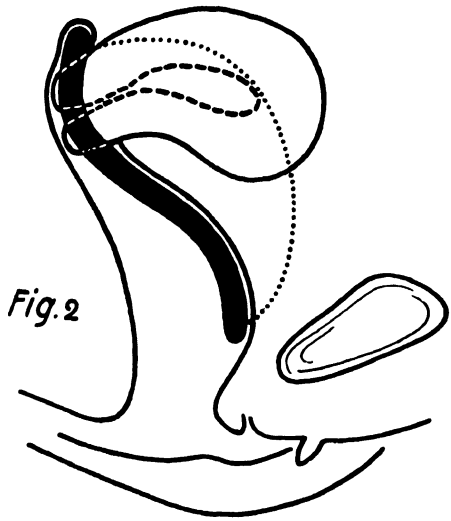


Fig. 2

Fig. 3

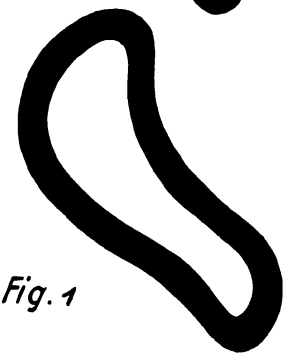


Fig. 1

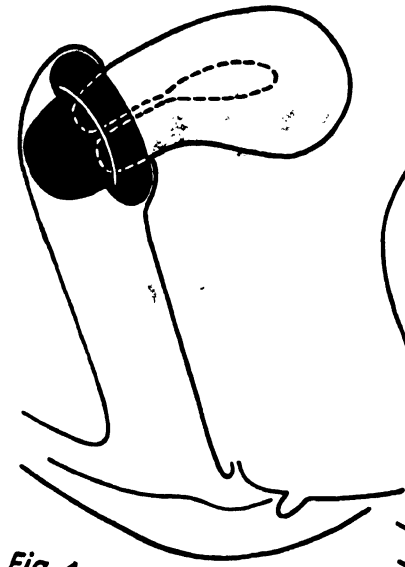


Fig. 4

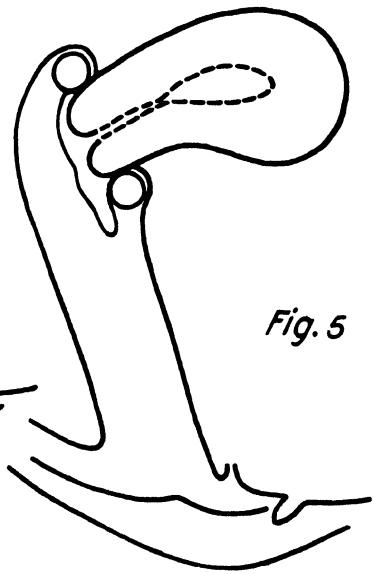


Fig. 5

PLATE XVII.

RETROFLEXION PESSARY, HODGE-SMITH MODEL.

These appliances, made of *vulcanite* and similar materials, are used in cases of uterine displacement after the womb has been restored to its normal position, in order to keep it in place.

Fig. 1 represents the contour and **Fig. 2** the position when adjusted. According to Dr. *Van de Velde's* advice a very good and appropriate occlusive pessary * is made of a ring of similar shape, but different material, and a rubber membrane with its most pronounced curvature *upwards and to the front*, as indicated by the dotted line, in **Fig. 2** and depicted in **Fig. 3.**

Fig. 4 shows the position of one of the *rubber portio protectors or cervical caps* (see Plate XVIII.) covering the *portio vaginalis* and protruding into the vagina. In reality, of course, the dome of the cap is folded together under the pressure of the vaginal walls.

Fig. 5 shows the position of a cervical cap of similar shape *but made of thin condom rubber* (as directed by Dr. *Van de Velde*), in section.

The scale is as in Plate XVI. It should be noted that all these appliances are made in different sizes.

* Since this book has gone to Press arrangements have been made for the manufacture of these pessaries. They will shortly be obtainable at all Chemists, and are made by Messrs. Harman Freese, 32, Great Dover Street, London, E.C. (Publishers' Note.)

PLATE XVIII.

Fig. 1.—*Cervical cap* of dark brown thick natural rubber, with solid inelastic ring. So-called French model (Pessaire à chapeau).

Fig. 2.—*Cervical cap* of dark brown, thick rubber, with solid but supple rubber ring. Model " pro race."

Fig. 3.—*Cervical cap* of thick dark brown rubber with hollow ring. The silk and rubber string is optional and removable.

Fig. 4.—*Cervical cap* of the same rubber, in two sections. The upper ring is meant to remain in position and the domed portion to be changed at will. American model : " Mizpah."

Fig. 5.—*Portio protector* of solid metal, with solid metal ring.

Fig. 6.—*Portio protector* of celluloid, " Tarnkappe " patent.

Fig. 7.—*Portio protector* of metal, " Orga " patent. The prospectus terms it " an elastic occlusive pessary." This model is also manufactured in celluloid, with a somewhat differently-shaped edge. (Cf. the pattern shown in Fig. 4 on Plate XIX.).

Fig. 8.—*Portio protector* of solid metal, with a solid metal ring (" Vetovit ").

All appliances are shown in natural size on this plate.

PLATE XVIII.

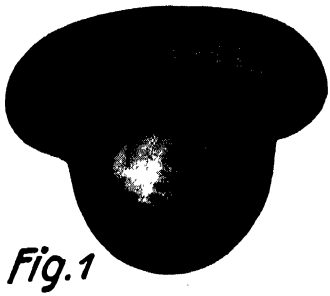


Fig. 1

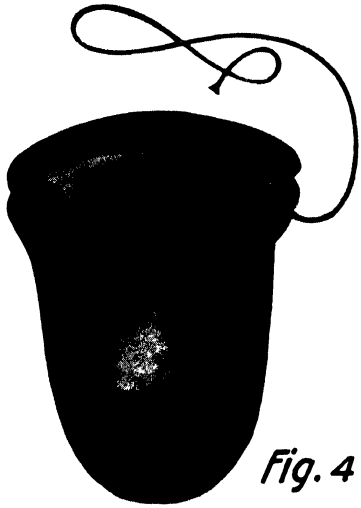


Fig. 4

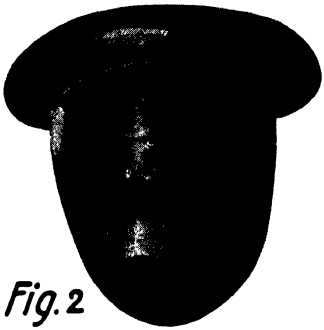


Fig. 2

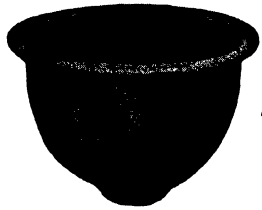


Fig. 6

Fig. 3

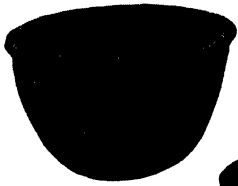


Fig. 5

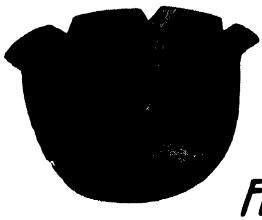


Fig. 7

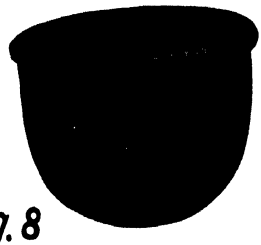


Fig. 8

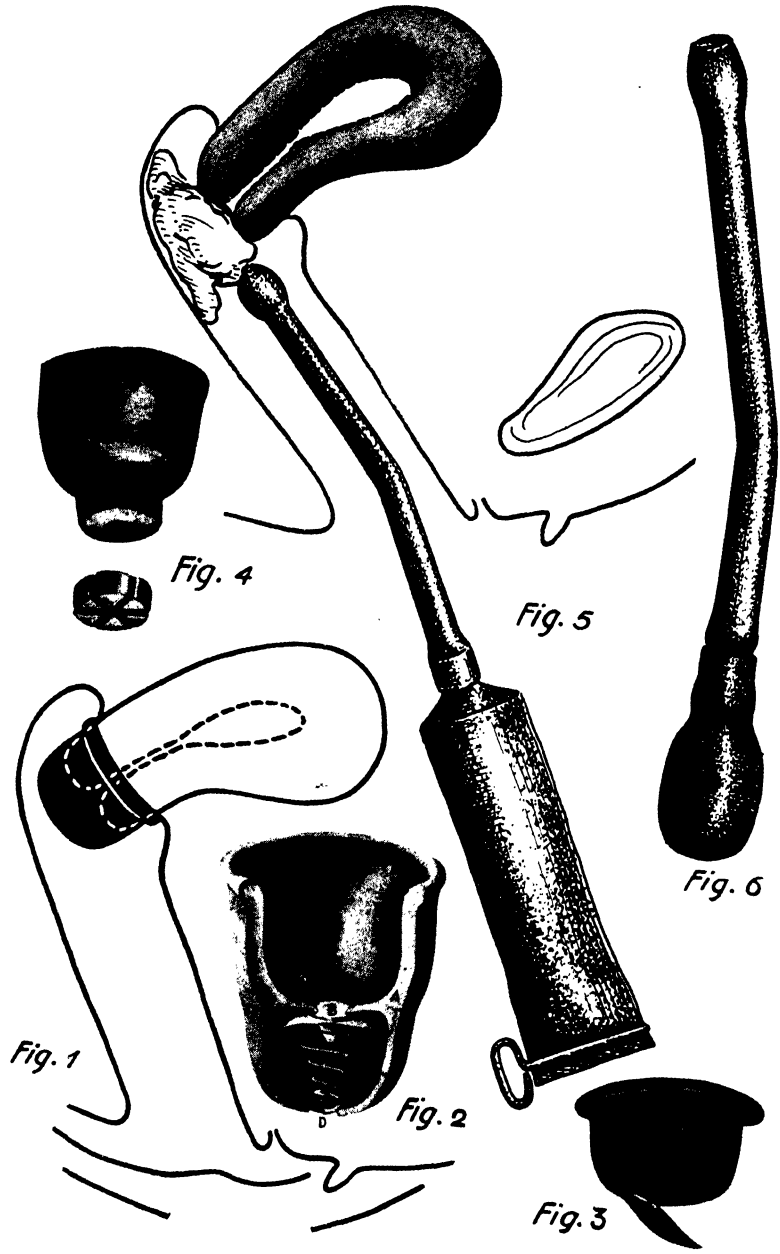


Fig. 1

Fig. 2

Fig. 3

Fig. 4

Fig. 5

Fig. 6

PLATE XIX.

Fig. 1.—Representation of the *correct position* of a cervical cap formed of a solid substance such as celluloid or metal.

Fig. 2.—*Portio protector of metal* and "Simalit" ("a mineral product"). Patent *Kaeser*, according to the medical prospectus.

A. Body of pessary.
B. Ventilating lid.
C. Ventilating spiral spring.
D. Perforations in the floor of pessary.

"The exact size suitable for use in this pessary is ascertained by means of the "Pessary trial rings" or "Fitting rings." "The *Kaeser* pessary should be removed about four times yearly for purposes of cleanliness." "The only occlusive pessary which may be left in situ during menstruation." *But, note what has been pointed out against this in Chapter XIV.*

Fig. 3. *Portio protector of metal* with strong metal ring. This appliance has a lid, which is supposed to be opened by means of the finger-nail before menstruation and closed again when the period is over. Patent "Hygica."

Fig. 4.—*Portio protector of celluloid.*—Patent "Orga-special." This appliance has a cylindrical lower portion with a small plug saturated in Thymol. This is intended to drain off the uterine secretions and discharges and to shut out the spermatozoa. It is also manufactured in metal.

Fig. 5.—*Representation of the application of a contraceptive jelly* out of a tin tube by means of a glass pipe screwed on to the tube. For reasons of space on this Plate, the illustration appears as though the jelly were applied when the woman stood upright on her feet; in reality, however, it should be applied in the recumbent posture.

Fig. 6.—*Pipe or cannula* with a small rubber balloon, for inserting contraceptive jelly. The jelly is sucked in through the tube. It should then be pressed out, after the cannula has been passed as far as possible up the vagina.

PLATE XX.

SOME INTRAUTERINE APPLIANCES.

NOTE: ALL INTRAUTERINE APPLIANCES SHOULD BE REJECTED AS DANGEROUS.

Fig. 1.—*Intrauterine stud*, made of metal, glass, ivory, vulcanite, celluloid. The head lies above the inner os, within the uterus (the os internum has been indicated in Fig. 1, Plate XVI., by two thick lines), o. i. = section of the os internum.

Fig. 2.—*Intrauterine stud* with cylindrical upper portion, which lies within the cavity of the uterus.

Fig. 3.—*Instrument made of metal*, celluloid, ivory or glass (etc., with a ring of other supple substance, such as pliable silver wire) catgut or silkworm gut. This ring is intended to lie within the uterine cavity.

Fig. 4.—*Intrauterine appliance of metal*, with special spring and forked branches, which lie within the uterine cavity.

Fig. 5 to **Fig. 7.**

5. *Silk star.*
6. *Silk ring bound with silver wire.*
7. *Ring of twisted silver wire.*

All these are described by *Gräfenberg*. They are inserted into the uterine cavity and left there for long periods of time. Their removal is attended with difficulties, often of a serious kind.

All appliances are shown in natural size on this plate.

PLATE XX.

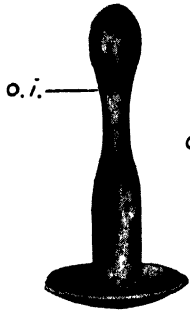


Fig. 1

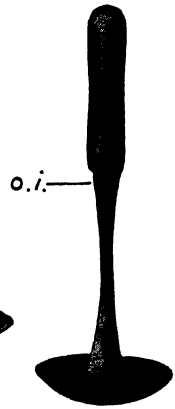


Fig. 2

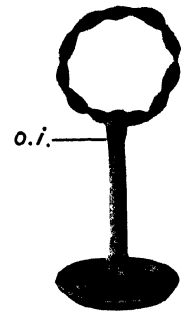


Fig. 3

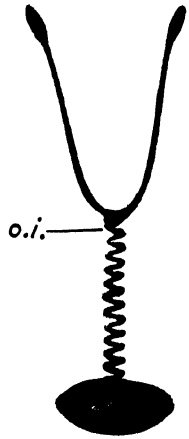


Fig. 4

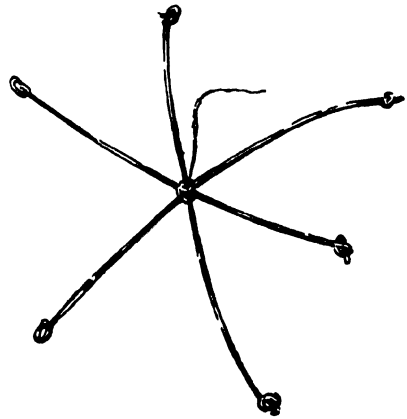


Fig. 5

NAWAB SALAR JUNG BA

Fig. 6

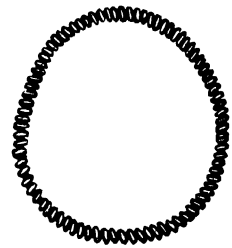


Fig. 7